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In recent decades, technology development and use have proliferated societies across the world (Cole et al., 2009). Technology is defined as innovative equipment with specific functions that people use to achieve a goal (Parasuraman, 2000). In general, technology advancements have become an integral part of North Americans' daily routines (Duggan, & Brenner, 2013; Rainie, 2010; Smith, 2012). As a result, technology influences the structure and processes of intimate relationships (Hertlein, 2012; Hertlein & Blumer, 2014).

Hertlein and Blumer (2014) developed the Couple and Family Technology framework to explain the impacts of technology on intimate relationships. According to this framework, technology has transformed individuals' interactions including the initiation, maintenance, and termination processes within romantic relationships. The relationship between technology and intimate relationships, however, is multifaceted. Partners' uses of technology can impact their relational intimacy, and couples' pre-existing relationship dynamics can impact how they use technology in their intimate relationships (Campbell & Murray, in press; Hertlein, 2012; Hertlein & Ancheta; Lanigan, 2009; Murray & Campbell, in press). Therefore, couples are confronted with negotiating patterns of technology use in order to become satisfied with ones' own and ones' partners' technology use behaviors.

Current literature trends indicate that positive and negative impacts of technology on couples' intimacy are evident (Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014; Murray & Campbell, in press). To date, however, minimal research has been done to identify the individual and relational characteristics that influence technology use on relational intimacy. Therefore, the purpose of this study was to identify individual and relational background characteristics that impact how partners view and use technology, as well as examine the impact partners' use has on their relational intimacy. Specifically, this study was used to determine if there are identifiable groups of people based on the following characteristics: Technology readiness (TR), couple communication, and uses of technology that enhance or reduce couples' intimacy. In addition, the impact of participants' personal and relational background characteristics (i.e., age, gender, relationship duration, and relationship satisfaction) were examined to inform clinicians about different types of technology engagement that can positively or negatively impact couples' intimacy.

In this study, it was found that four clusters existed based on scores of TR, communication, intimacy-enhancing and intimacy-reducing uses of technology. Each group was provided with an identification descriptive label (i.e., Secure, Pursuer, Dismissive, and Fearful) based on the unique combination of variables of each group. Group differences were most relative to the newly developed variables of couple communication (CC) and technology-mediated intimacy (TMI). The demographic variables of age, relationship duration, and gender also contributed to differences among the clusters. A final finding of this study was that partners' intimacy-enhancing and

intimacy- reducing uses of technology were significant predictors of relationship satisfaction. The clinical implications of these results and directions for future research are discussed.

TECHNOLOGY, COMMUNICATION, AND COUPLES' INTIMACY: A STUDY OF  
TECHNOLOGY USE BEHAVIOR AND INTIMATE RELATIONSHIPS

by

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## APPROVAL PAGE

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## TABLE OF CONTENTS

	Page
LIST OF TABLES .....	xii
LIST OF FIGURES .....	xiv
 CHAPTER	
I. INTRODUCTION .....	1
Technology Readiness .....	4
Communication .....	6
Technology and Couples' Intimacy .....	8
Demographic and Relationship Background Characteristics .....	10
Purpose of the Study .....	13
Hypothesized Profile Groups .....	13
Group 1 .....	14
Group 2 .....	15
Group 3 .....	15
Group 4 .....	17
Statement of the Problem .....	18
Research Questions and Hypotheses .....	20
Research Question 1 .....	20
Hypothesis 1 .....	20
Research Question 2a .....	21
Hypothesis 2a .....	21
Research Question 2b .....	21
Hypothesis 2b .....	22
Research Question 3 .....	22
Hypothesis 3 .....	22
Need for the Study .....	22
Definition of Terms .....	25
Summary and Overview of Remaining Chapters .....	26
II. LITERATURE REVIEW .....	27
Prevalence of Technology and Technology Use .....	27
Modern Day Technology and Rates of Usage .....	28
Technology Use in Couples' Relationship .....	30
The Impact of Technology Readiness on Technology Use .....	32
Technology Readiness .....	32

Technology readiness dimensions .....	33
Measuring technology readiness .....	36
History of technology readiness research .....	36
The Impact of Background Characteristics on Technology Use .....	39
Personal Background Characteristics .....	39
Age .....	39
Gender .....	40
Relationship Background Characteristic: Relationship	
Duration .....	44
Communication in Intimate Relationships.....	47
Couple Communication .....	48
Positive communication .....	48
Negative communication .....	49
Technology as a Means of Communication.....	50
Relationship Satisfaction: Connections to Communication and	
Technology Use .....	55
The Impact of Couple Communication on Relationship	
Satisfaction .....	56
Couple communication and relationship	
satisfaction .....	56
Relationship Satisfaction and Technology Use .....	60
Relationship satisfaction's effect on technology	
use .....	61
The effect of technology on relationship	
satisfaction .....	62
The Impact of Technology on Intimate Relationships.....	65
Couple and Family Technology Framework .....	66
Family ecology.....	67
Structural-functional .....	69
Interaction-constructivist .....	71
Limitations to the CFT framework .....	72
Positive and Negative Influences of Technology on	
Intimate Relationships.....	75
Positive influences .....	77
Negative influences.....	81
The Technology and Intimate Relationship Assessment.....	87
Conclusion .....	89
III. METHODOLOGY .....	91
Research Questions and Hypotheses .....	91
Participants.....	94
Participant Recruitment .....	95

Study Procedures .....	96
Instrumentation .....	97
Demographic Questionnaire .....	98
Technology Readiness Index .....	98
Primary Communication Inventory .....	100
Relationship Assessment Scale .....	103
Technology and Intimate Relationship Assessment .....	105
Data Analysis .....	108
Identification of Clusters .....	110
Agglomerative hierarchical cluster analysis .....	111
Discriminant analysis .....	112
Identifying Group Differences .....	113
Analysis of variance .....	113
Chi-square test .....	114
Multiple regression analysis .....	114
Pilot Study .....	114
Research Questions and Hypotheses .....	115
Participants .....	115
Instrumentation .....	115
Procedures .....	116
Integrated Feedback .....	117
Time estimation .....	117
Format, clarity, and other feedback .....	117
Differences between paper copy and electronic survey .....	119
Other Modifications to the Full Study .....	123
Summary .....	124
IV. RESULTS .....	125
Results .....	125
Description of the Sample .....	125
Results of Preliminary Analyses .....	131
Research Question 1 .....	134
Results of the hierarchical agglomerative cluster analysis .....	134
Results of the discriminant analysis .....	137
Description of the Clusters .....	142
Cluster 1 .....	142
Cluster 2 .....	143
Cluster 3 .....	145
Cluster 4 .....	146
Research Question 2a .....	147

Research Question 2b .....	149
Research Question 3 .....	151
Summary .....	153
V. DISCUSSION .....	155
Discussion of Results .....	157
Description of the Sample .....	157
Preliminary Analyses .....	158
Research Question 1 .....	159
Secure .....	160
Pursuer .....	162
Dismissive .....	163
Fearful .....	165
Research Questions 2a and 2b .....	166
Age .....	167
Relationship duration .....	168
Gender .....	170
Research Question 3 .....	171
Limitations .....	173
Implications for Counseling .....	175
Counselor Education .....	176
Characteristics of Technology Users .....	178
Assessment Tools .....	180
Addiction and Infidelity .....	182
Other Interventions .....	183
Relationship Repair .....	184
Summary .....	186
Future Research .....	186
Conclusion .....	190
REFERENCES .....	192
APPENDIX A. IRB APPROVAL .....	214
APPENDIX B. RECRUITMENT MATERIALS FOR PILOT STUDY .....	217
APPENDIX C. RECRUITMENT MATERIALS FOR FULL STUDY .....	220
APPENDIX D. INFORMED CONSENT .....	224
APPENDIX E. DEMOGRAPHIC QUESTIONNAIRE .....	233

APPENDIX F. INSTRUMENTATION .....	242
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## LIST OF TABLES

	Page
Table 1. Level, Variable, and Brief Rationale .....	4
Table 2. Four Dimensions that Explain Individual Technology Readiness (Parasuraman, 2000) .....	33
Table 3. “Seven A’s”, that Impact Couples’ Structure and Process (Hertlein & Blumer, 2014) .....	68
Table 4. Summary of Research Questions, Hypotheses, Measures, and Analyses .....	92
Table 5. Summary of Participants Feedback on Format, Clarity, and Other .....	118
Table 6. Summary of Differences Between Hard and Electronic Version Survey Responses .....	120
Table 7. Summary Table of Frequencies for Participants’ Background Characteristics.....	127
Table 8. Summary Table of Central Tendencies for Participants’ Age and Relationship Duration .....	128
Table 9. Summary Table of Means and Standard Deviations for Main Variables .....	130
Table 10. Multivariate Analysis Table for Significant Difference between Paper and Electronic Survey .....	131
Table 11. Summary Table of ANOVAs for Participants’ Scores on the Measures of TR, Couple Communication, Intimacy-Enhancing Uses of Technology Intimacy-Reducing Uses of Technology, Age, Relationship Duration, and Gender .....	132
Table 12. Summary Table of Means for Electronic and Paper Copy Scores on Age, Relationship Duration, and Couple Communication .....	133
Table 13. Cluster 1-4 Mean and SD Summary Table for Main Variables and Relational Variables.....	135

Table 14. Clustered Groups Frequency Summary Table for Demographic Variables .....	136
Table 15. Discriminant Analysis Summary Table .....	138
Table 16. Discriminant Analysis Summary Table for Variable Weights on Dimensions CC and TMI .....	140
Table 17. Summary Table of Cluster Group Means on Dimensions CC and TMI .....	141
Table 18. ANOVA Summary Table for Group Differences Between Age and Relationship Duration Among Clusters 1, 2, 3, and 4.....	148
Table 19. Tukey's HSD Post Hoc Analysis Summary Table .....	149
Table 20. Chi-Square Summary Table for Group Differences Based on Gender .....	150
Table 21. Chi-Square Summary Table for Significant Residuals Based on Gender.....	150
Table 22. Multiple Regression Summary Table for Perceived Impacts of Technology and Relationship Satisfaction .....	151



## LIST OF FIGURES

	Page
Figure 1. The Couple and Family Technology Framework (CFT).....	2
Figure 2. Hypothesized Communication Skills and Technology Readiness Cluster Groups.....	17
Figure 3. Left - the Multitheoretical Model for Understanding the Technology in Couple and Family Life.....	66
Figure 4. Cluster Analysis Dendrogram .....	134
Figure 5. Cluster Groups Based on the Dimensions of Couple Communication (CC) and Technology Mediated Intimacy (TMI) .....	160

## CHAPTER I

### INTRODUCTION

Technology is defined as human-made, innovative equipment with specific functions that people use to achieve a goal (Parasuraman, 2000). Dating back to the 1980s, social science scholars have debated the helpful and harmful impacts of technology, specifically the home computer, on family life (Blinn-Pike, 2009). In modern society, technology development and use have thrived (Cole et al., 2009). In general, technology has become a prominent part of peoples' daily routines (Duggan, & Brenner, 2013; Rainie, 2010; Smith, 2012), serving as a primary link for fulfilling work, information, entertainment, and relational needs (Ku, Chu, & Tseng, 2013). As a result, technology influences the structure and processes of intimate relationships (Hertlein, 2012; Hertlein & Blumer, 2014). Over time, the debate of whether technology use is improving or harming intimate relationships has persisted.

Hertlein and Blumer (2014) developed the Couple and Family Technology framework (CFT; see Figure 1), adapted from the Multitheoretical Model for Understanding the Technology in Couple and Family Life (Hertlein, 2012), to explain the positive and negative impact of technology on intimate relationships. According to the CFT framework, the incorporation of technology into intimate relationship systems has altered how partners interact with one another (Hertlein & Blumer, 2014). Moreover,

advanced technology has influenced romantic relationship structures by creating unclear rules, boundaries, and roles for intimate partner interactions (Hertlein, 2012; Hertlein & Blumer, 2014). As a result, technology has transformed the daily interactions between partners, as well as the initiation, maintenance, and termination processes within romantic relationships.

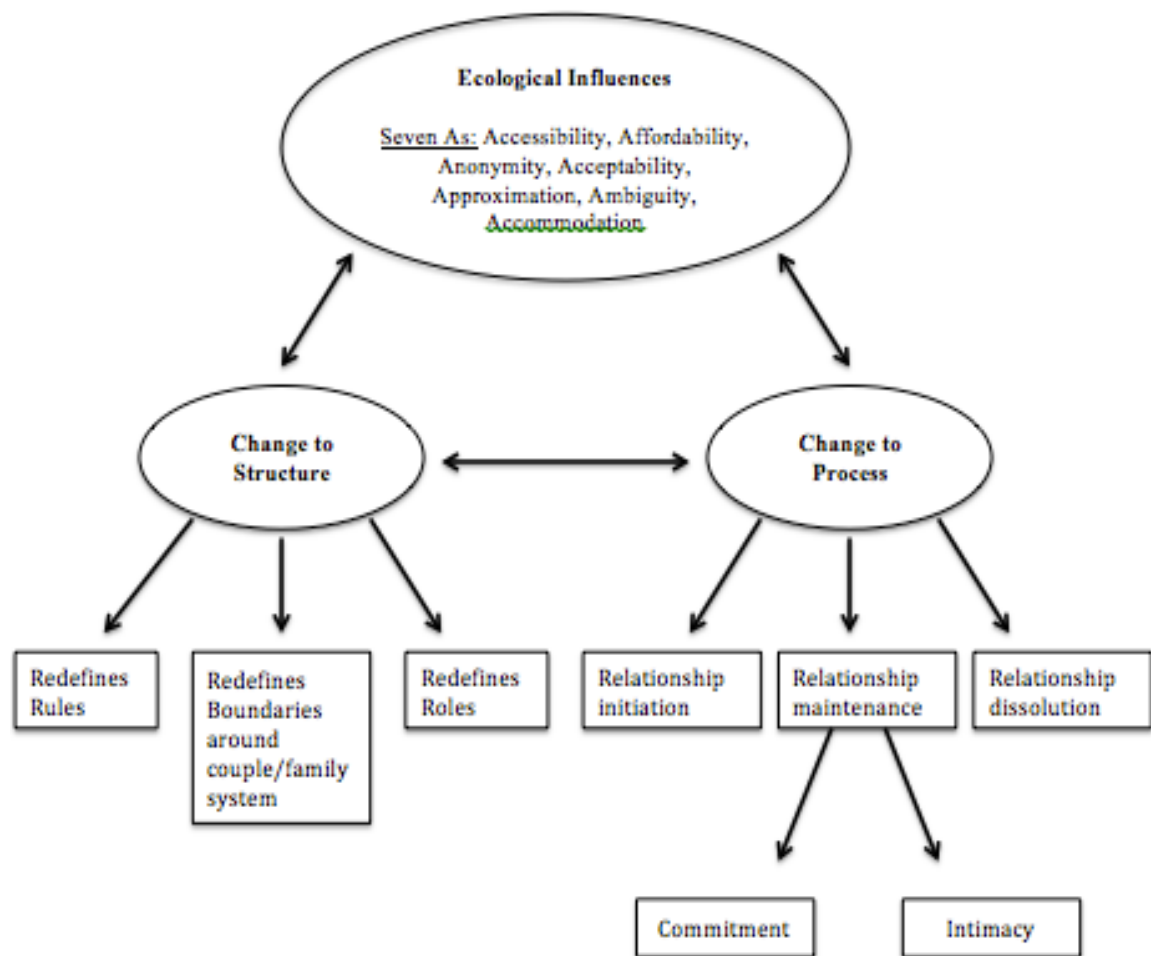


Figure 1. The Couples and Family Technology Framework (CFT). Copyright (2014) from *The Couple and Family Technology Framework: Intimate Relationships in a Digital Age* (78), by K. M. Hertlein and M. L. C. Blumer, 2014, New York, NY: Routledge. Reproduced by permission of Taylor and Francis Group, LLC, a division of Informa plc.

Hertlein and Blumer's (2014) CFT framework is relevant because it posits that technology changes how partners interact with one another. However, this framework only provides a general conceptualization for how technology impacts the structure and process of intimate relationships, specifically for couples' intimacy and communication. Currently, researchers have limited knowledge of how various personal and relationship factors-- such as technology readiness (TR), communication patterns, and how couples use technology to foster or hinder intimacy—impact their relational systems. Additionally, the framework does not address age, gender, relationship duration, and relationship satisfaction which are all variables that have been found to affect how individuals view and use technology to communicate in intimate relationships (Campbell & Murray, in press; Coyne et al., 2011). The present study examined the interplay of these variables on how technology use impacts romantic relationships (see Table 1). There are any number of specific variables that could be examined at each level (i.e., individual, relational, and the interface of relational intimacy and technology). However, for purposes of this study, the focus was on TR at the individual level, communication at the relational level, and intimacy-enhancing and intimacy-reducing uses of technology in relationships in the latter domain. The existing literature supports a focus on these specific variables, as was detailed briefly below and in greater detail in Chapter 2. The following sections include a brief overview of the identified variables in order to establish the purpose of this study.

Table 1

Level, Variable, and Brief Rationale

<b>Level</b>	<b>Variable</b>	<b>Brief Rationale</b>
Individual	Technology Readiness	People vary in their openness to incorporate technology into daily routines.
Relational	Couple communication	Technology is a medium for communication that can be relationally fulfilling (i.e., enhance connection and intimacy) or distressing (i.e., reduce connection and intimacy).
The interface of relational and technology intimacy	Intimacy-enhancing use of technology and intimacy-reducing uses of technology	Individuals use technology in different ways within their intimate relationships that positively or negatively impact their relationship intimacy.

### **Technology Readiness**

Partners' uses of technology within their relationships are likely influenced by their overall views toward technology. People have predisposed views and beliefs about technology that impact their level of readiness to embrace technologies (Parasuraman, 2000). In the past few decades, the rapid development of technology and the infusion of technology into day-to-day routines have heightened mixed views and beliefs amongst consumers and users of technology.

Originating in the services and marketing literature, the concept of TR emerged as researchers identified a continuum of views and beliefs amongst individuals exposed to new technology. Technology readiness is described as individuals' inclination to accept and use new technologies to achieve goals in both their personal and professional life.

Individuals' views of and relation to technology were reduced into the following four dimensions: *Optimism*, *Innovativeness*, *Discomfort*, and *Insecurity*. These dimensions are used to conceptualize and describe individuals' level of TR (Parasuraman, 2000). The four dimensions will be described in greater detail in Chapter 2.

The optimism dimension describes the extent to which individuals' hold a positive view of technology (Parasuaman, 2000; Rose & Fogarty, 2010). Individuals who score high in optimism believe that technologies enhance efficiency, control, and flexibility in peoples' daily routines. The innovativeness dimension describes the extent to which individuals' hold a positive view of technology. The primary difference between the optimism dimension and the innovativeness dimension is based on leadership. Individuals' who score high in innovativeness are considered the creators of new ideas and developers of new technologies. The optimism and innovations dimension describe individuals' who are eager to create, explore, understand, and use new technologies in their daily routines (Parasuraman, 2000; Rose & Fogarty, 2010). Refer to Table 2 in Chapter 2.

In contrast to optimism and innovativeness dimensions, the discomfort dimension describes the extent to which people have negative views of technology (Parasuraman, 2000; Rose & Fogarty, 2010). Individuals who score high in discomfort lack confidence in their skills and feel a lack of control over technology. Therefore, these individuals are unwilling to use technology in their day-to-day routines. Similarly, the insecurity dimension describes the extent to which people have negative views of technology. The primary difference between discomfort dimension and insecurity dimension is based on

the emphasis of distrust. Individuals' who score high on the insecurity dimension distrust that the technology device will work appropriately. In fact, these people believe that use of new technologies will negatively affect them. Furthermore, the discomfort and insecurity dimensions describe individuals are unwilling to use or avoid using new technologies (Parasuraman, 2000; Rose & Fogarty, 2010). Refer to Table 2 in Chapter 2.

In addition to the four TR dimensions used to conceptualize individuals' willingness to use technology, peoples' views toward technology are further understood by their underlying beliefs toward technology. Individuals can feel strongly negative, strongly positive, neutral, or a mixture of feelings about integrating and using new technologies. Thus, coexisting beliefs and feelings are normal and vary from individual to individual (Parasuraman, 2000). Positive feelings about technology encourage (drive) individuals towards using, while negative feelings may discourage (inhibit) individuals from using technology. As a result of these feelings, individuals develop beliefs about technology, which influence their willingness to embrace new technologies (Parasuraman, 2000; Parasuraman & Colby, 2001). Therefore, TR addresses individuals' views of and beliefs about technology, including their predisposition to use technology, as well as skepticism and fears that prevent usage (Parasuraman, 2000). As a result, TR is hypothesized in the current study to influence how technology platforms are used to communicate in couple relationships.

### **Communication**

Technology serves as one medium of communication within modern romantic relationships. More broadly, intimate partners engage with one another through verbal

and nonverbal communication to convey their needs to one another, which can result in an emotional connection or conflict (Gottman, 1999; Laurenceau, Barrett, & Rovine, 2005). Because couples' patterns of communication are deeply embedded within their existing relationship dynamics, such patterns reflect partners' ability to communicate needs on a daily basis and overcome distress (Gottman, 1999; Laurenceau et al., 2005). Thus, couples' positive and negative patterns of interpersonal communication can determine their overall relationship quality (Markman, Rhoades, Stanley, Ragan, & Whitton et al., 2010; Reiss & Shaver, 1988) and can regulate their relationship stability across time (Markman et al., 2010).

Positive communication results from clearly understanding what a person is feeling (i.e., in a nonreactive state), seeking support, and congruently stating ones' needs to an attentive partner (Guerrero et al., 2009; Reiss & Shaver, 1988). Effective communication can prevent conflicts from arising, help partners resolve problems during a conflict, and reconnect when the conflict has ceased (Gottman, 1999; Johnson, 2004; Rehman et al., 2011). Couples in which partners engage in effective communication patterns tend to feel more intimately connected and have an overall sense of satisfaction and stability in their relationships (Laurenceau et al., 2005; Rehman et al., 2011). Additionally, intimate communication results in positive changes in relationship satisfaction and sexual satisfaction (Byers, 2005).

In comparison to positive communication, negative communication results from an inability to clearly identify and communicate emotional needs (Guerrero, Farinelli, & McEwan, 2009). For example, if an individual feels lonely for their partner's attention



and conveys blame onto their partner for not caring enough, this may elicit a defensive and withdrawing response from their partner, rather than a desire to become more intimate (Gottman, 1999). Couples in which partners engage in distressing communication patterns tend to feel locked in a demand /withdraw interaction cycle, resulting in partners feeling less emotional security, stability, intimacy, and satisfaction in their relationship (Allen et al., 2008; Christensen & Heavey, 1990; Gottman, 1999; Guerrero et al., 2009; Laurenceau et al., 2005; Millwood & Waltz, 2008; Rehman et al., 2011). In summary, interpersonal communication, whether positive or negative, contributes immensely to the overall quality of couples' relationships (Busby et al., 2001; Christensen & Heavey, 1990; Laurenceau et al., 2005; Rehman et al., 2011).

### **Technology and Couples' Intimacy**

Researchers are beginning to examine how technology use impacts couples' relational intimacy (Hertlein, 2012; Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014; Hertlein & Webster, 2008; Murray & Campbell, in press). For example, intimate partners may use technology to enhance their relationship intimacy by communicating affectionate messages to one another (Coyne, 2011; Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014; Murray & Campbell, in press; Perry & Werner-Wilson, 2011). In contrast, if partners already demonstrate a distressing face-to-face pattern of communication, the same pattern of communication may emerge through technology-mediated verbal communication (e.g., criticizing partner through a video chat) (Duran, Kelly, & Rotaru, 2011; Jin & Park, 2010; Murray & Campbell, in press; Perry & Werner-Wilson, 2011; Weisskirch, 2012) or nonverbal communication (e.g., using technology to

avoid partner) (Coyne et al., 2012; Helsper & Whitty, 2010; Hertlein & Webster, 2008; Manning, 2006; Young, Griffin-Shelley, Cooper, O'Mara, & Buchanan, 2000).

Many couples have assimilated technology into their daily interactions with one another (Coyne, Stockdale, Busby, Iverson, & Grant, 2011), impacting their relationships in two major ways. First, technology platforms are new outlets for pre-existing relationship dynamics to emerge (Hertlein, 2012; Hertlein & Blumer, 2014). For instance, people who are securely attached and highly satisfied in their relationships may use different forms of technology to engage with their partners to deepen the connection (Coyne et al., 2011). In contrast, couples that are insecurely attached and are not satisfied in their relationships may use technology to check-up on one another (Dijkstra, Barelds, & Groothof, 2010; Duran et al., 2011; Schnurr, Mahatmya, & Basche 2013), confront each other (Coyne et al., 2011), or avoid each other (Coyne et al., 2012; Henline, 2006; Jin & Peña, 2010). As such, pre-existing relationship dynamics influence how partners integrate technology into their relationships (Perry, & Werner-Wilson, 2011; Pettigrew, 2009). In sum, existing research suggests that individuals' technology use behaviors within their relationships both result from ongoing patterns of interaction between partners and reinforce existing patterns.

Second, the integration and use of technology can have both positive and negative influence on intimate relationships (Henline, 2006; Hertlein & Ancheta, 2014; Hertlein, 2012; Hertlein & Blumer, 2014; Murray & Campbell, in press). While technology creates new platforms for couples to develop and maintain intimacy in their relationships, it also can hinder intimate connections (Hertlein & Ancheta, 2014; Hertlein & Blumer,

2014; Murray & Campbell, in press). For instance, couples use interactive forms of technology---such as cell phones, video chat, and email---to enhance feelings of closeness and connection (Coyne et al., 2011; Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014; Pettigrew, 2009; Neustaedter & Greenberg, 2012; Valentine, 2006). Conversely, specific characteristics of technology, such as anonymity and accessibility, can create new obstacles for couples to overcome (Hertlein & Blumer, 2014; Hertlein & Stevenson, 2010; Hertlein & Webster, 2008). As such, the integration of technology into romantic relationships can fuel insecurities by absorbing time away from the romantic relationship (Coyne et al., 2012; Henline, 2006; Hertlein & Blumer, 2014) and by creating platforms where social comparisons (Henline, 2006; Hertlein & Blumer, 2014), enmeshed interactions (Duran et. al., 2011), nonverbal mishaps (Hertlein & Ancheta, 2014; Pettigrew, 2009), and extra-relational intimacy (Millner, 2008) can occur, overtly hindering couples' intimate interactions. As such, partners' patterns of technology use can either enhance or hinder romantic relationship intimacy (Campbell & Murray, under review; Hertlein & Ancehta, 2014; Murray & Campbell, in press).

### **Demographic and Relationship Background Characteristics**

In addition to pre-existing relationship dynamics, other individual demographic and relationship characteristics impact how people view and use technology and how that impacts their intimacy (Campbell & Murray, in press; Coyne et al., 2011). Age is one demographic characteristic that influences technology use behaviors (Campbell & Murray, in press; Coyne et al., 2011). In general, younger individuals are more likely to use technology (Lenhart, 2010; Smith, Rainie, & Zickuhr, 2011; Zickuhr & Smith, 2012),

and to specifically use technology to communicate with their partners (Coyne et al., 2011). Further, they also are more likely to report that their technology use, both positively and negatively, impacts their romantic relationship intimacy (Campbell & Murray, in press). In addition, older individuals are less likely use technology to communicate with their partners, and less likely to experience suspicion and jealousy or affection and connection in relation to their partner's technology use behaviors (Dijkstra et. al., 2010).

Gender is another demographic characteristic that appears to impact the frequency of technology use (Imhof, Vollmeyer, & Beierlein, 2007). Previous researchers have found that men are more likely to use the Internet for personal reasons, while women are more likely to use the Internet for task completion (Imhof et al., 2007). For example, in one study, men were found to listen to and download music, watch music videos and movies, play online video games, engage in online dating, and visit adult websites (e.g., chat rooms, pornography) more than women (Jones, Johnson-Yale, Millermaier, & Soeane, 2009). Relatedly, men and women view and respond to their partners' Internet activities differently. Women may more negatively perceive loss of time with and attention from their partners as a result of their investment in technology (Coyne et al., 2012; Whitty, 2005). Specifically, Whitty (2005) found that women were more likely to report experiencing broken relational trust and a perceived emotional affair associated with their partner's use of technology. Similarly, women became more distressed in relation to their partners' perceived or actual emotional and sexual involvement with another person online (Dijkstra et. al., 2010; Parker & Wampler, 2003). Additionally,

researchers suggest that social media relationship status and profile pictures influence women's views of their relationship more so than men (Papp, Danielewicz, & Cayemberg, 2012). For example, women in a committed and intimate relationship were found to be more concerned about advertising their relationship status information to their social media friends and family through a social media partnered status (e.g., in a relationship, married, in a domestic partnership, divorced) and a partnered profile picture than men. Papp et al. (2012) also found that women were more distraught when their partners did not engage in the same practices.

Relationship duration is another important characteristic that influences technology use behaviors (Campbell & Murray, in press; Coyne et al., 2011). In general, couples in long-lasting (i.e., post-dating) and durable relationships use technology less to communicate with their partner (Campbell & Murray, in press; Coyne et al., 2011). However, when long-lasting intimate partners use technology-based communication, it is often done in order to communicate affection (Coyne et al., 2011).

Lastly, relationship satisfaction is another characteristic that influences technology use behaviors (Campbell & Murray, in press; Coyne et al., 2011). Couples who are highly satisfied in their romantic relationships use technology to communicate affection with one another (Coyne et al., 2011). As such, couples who use technology to communicate kind and loving messages cultivate more intimate interactions and are more satisfied in their romantic relationships (Coyne et al., 2011).

### **Purpose of the Study**

The purpose of this study was twofold: (a) identify individual and relational characteristics that influence how individuals view and use technology in relation to intimacy in their romantic relationships, and (b) determine the impact of intimacy-enhancing and intimacy-reducing uses of technology on couples' relationship satisfaction. First, the researcher used a cluster analysis to determine if there were identifiable groups of people based on TR, couple communication, and the impact of technology on relational intimacy (i.e., with technology enhancing intimacy, reducing intimacy, or a combination of the two). It was hypothesized that 4 groups would emerge based on participants' TR, positive and negative levels of communication skills, and enhancing and reducing impacts of technology on relational intimacy, as described later in this chapter (see Figure 2). Based on the groups found, group differences based on selected individual and relationship variables (i.e., age, gender, relationship duration) were examined. Finally, the researcher examined the proportion of variance in participants' relationship satisfaction that is explained by their perceived intimacy-enhancing and intimacy-reducing impacts of technology. These results emphasized both the overall positive and negative implications of technology on couples' relationships and provided evidence for variable levels of impact based on unique individual and relational characteristics.

### **Hypothesized Profile Groups**

In the current study, the researcher hypothesized that four groups of participants would emerge in the cluster analysis (Figure 2). The hypothesized cluster groups were

based primarily on the following two variables: TR (i.e. high versus low) and communication skills (i.e., positive vs. negative). In addition, it was hypothesized that these groups would follow predictable patterns with regard to the intimacy-enhancing and intimacy-reducing impacts of technology on relationship intimacy. The researcher provided a brief preliminary description of the hypothesized characteristics of each group based on the variables being studied.

**Group 1.** Cluster group 1 would consist of individuals with more positive communication skills and higher levels of TR. Because people in this hypothesized group have stronger communication skills and are more open to technology, it was assumed that they would demonstrate greater levels of technology usage to enhance their relationship intimacy, as well as lower intimacy-reducing impacts of technology. More positive communication skills result in a de-escalation of emotional distress (Guererro et al., 2009), conflict resolution (Domingue & Mullen, 2009; Gottman, 1999; Rehman et al., 2011), secure connection (Guererro et al., 2009; Millwood & Waltz, 2009), and higher relationship satisfaction (Allen et al., 2008; Guererro et al., 2009; Rehman et al., 2011; Troy, 2000). For example, technology can enhance romantic relationship intimacy when intimate partners use technology to show affection, (Coyne, 2011; Murray & Campbell, in press; Perry & Werner-Wilson, 2011; Pettigrew, 2009), seek out sexual information or visuals aids (Hertlein & Ancheta, 2014; Murray & Campbell, in press), share interest in leisure activities (e.g., TV shows; Murray & Campbell, in press), and use technology to manage relationship and personal activities (Lanigan, 2009; Murray & Campbell, in press). Overall, individuals with more positive communication likely translate these

skills into the domain of technology, especially when they hold more positive, open views toward technology.

**Group 2.** Cluster group 2 would be comprised of individuals with more positive communication skills but lower levels of TR. Even though the individuals in this hypothesized group have stronger communication skills (i.e., they are more likely to seek support and congruently communicate their thoughts and feelings to their attentive partner; Guerrero et al., 2009; Reiss & Shaver, 1988), they also have lower levels of TR. Currently, there is limited research examining the influence of TR on how people view and use technology within the context of couples' relationships. Therefore, it is unclear how the combined contrast effect of more *positive* communication skills and *lower* levels of TR will impact individuals' views and uses of technology as it relates to their relationship intimacy. It seemed likely, however, that these couples' positive communication patterns overall would help them to navigate the impacts and uses of technology within their relationships. Thus, it was hypothesized until proven otherwise that individuals with more positive communication skills and lower levels of TR would demonstrate moderate levels of intimacy-enhancing technology use and moderate levels of technology use behaviors that reduce relational intimacy.

**Group 3.** Cluster group 3 would consist of individuals with more negative communication skills but higher TR. As stated above in relation to Cluster 2, current research is unavailable to determine how TR influences how people view and use technology in relation to intimacy within their romantic relationships. It seemed likely, however, that these individuals' more negative communication patterns overall would



inhibit their ability to navigate any potential negative influences of technology within their relationships. As such, these individuals also were assumed until proven otherwise to demonstrate moderate levels of technology usage that reduce their relationship intimacy, as well as moderate intimacy-enhancing impacts of technology. In general, individuals with poorer communication skills are more likely to misinterpret their partners' communication and engage in destructive communication patterns (Guerrero et al., 2009; Millwood & Waltz, 2008), experience unresolved conflicts (Domingue & Mollen, 2009), and feel less satisfied in their relationship (Allen et al., 2008; Rehman et al., 2011; Troy, 2000). Similarly to more positive communication skills, people with more negative communication skills will likely transfer these poor skills into their technology use behaviors. Examples of poor technology communication that results in reducing relation intimacy include when technology is used to control (Schnurr et. al., 2013), check-up on, or monitor partners' behaviors (Helsper & Whitty, 2010), and either to excessively connect with partner (i.e., smothering partner; Duran et al., 2011) or avoid connecting with partner (Hertlein, 2010). Individuals who fall within this hypothesized group may demonstrate poor boundaries with technology such that usage detracts time, attention, and energy away from connecting with one's partner (Coyne et al., 2012; Hertlein, 2010). Lastly, individuals who use technologies to emotionally or sexually connect with someone other than their primary partner (Hertlein & Ancheta, 2014; Helsper & Whitty, 2010; Sprecher, 2009; Young et al., 2000) can also do harm to their primary relationship. Overall, individuals with more negative communication skills

likely would translate these skills into the domain of technology, especially when they hold positive and open views toward technology.

**Group 4.** Cluster group 4 would be comprised of individuals with more negative communication skills and lower levels of TR. Because the individuals in this hypothesized group have negative communication skills and low levels of TR, it was assumed that their poor communication skills would transfer into how they use technology. Thus, individuals with lower levels of TR and more negative communication skills were assumed until proven otherwise to demonstrate lower levels of technology usage to enhance their relationship intimacy, as well as higher levels of technology usage that reduces relational intimacy.

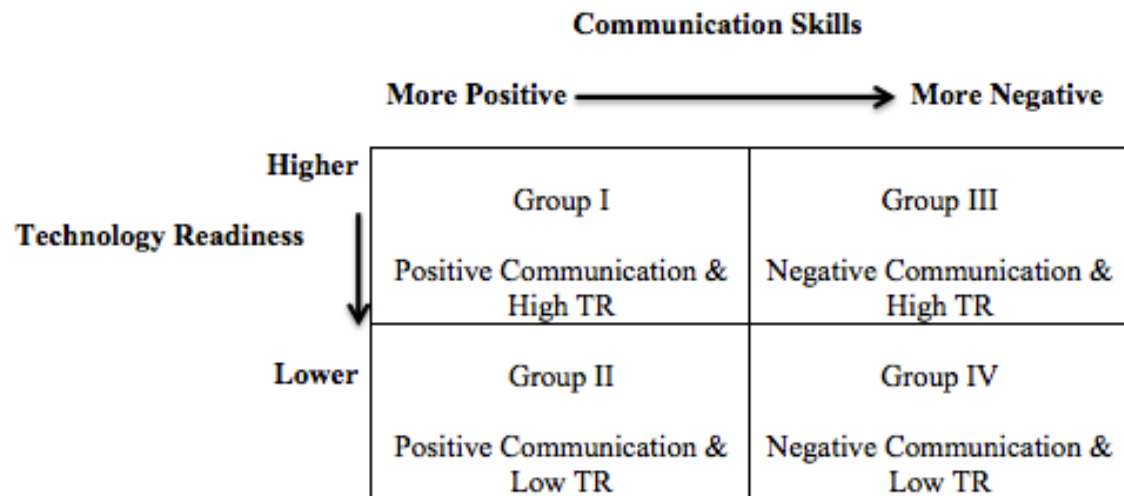


Figure 2. Hypothesized Communication Skills and Technology Readiness Cluster Groups

### **Statement of the Problem**

In recent years, technology has become a prominent part of peoples' daily lifestyles (Duggan, & Brenner, 2013; Rainie, 2010; Smith, 2012). The impact of technology is redefining intimate relationship structures (i.e., rules and boundaries) and processes (i.e., communication, behaviors, routines) for couple relationships (Hertlein, 2012; Hertlein & Blumer, 2014). It is important to understand how technology impacts couple and family relationships.

Hertlein and Blumer's CFT framework (2014) offers a general understanding about the effects of technology on the broad structure and process of couples' intimate interactions. This model suggests that technology can have positive and negative impacts on couples' intimacy. However, the model does not provide an in-depth description of how and why the impact of technology may vary for different couples. Thus, more research is needed to examine individual and relationship characteristics that are linked to variations in couples' uses and impacts of technology within their relationships.

In addition to the gaps left by Hertlein and Blumer's (2014) CFT framework, the impact of partners' daily technology use on their overall relationship satisfaction is unclear. That is, while relationship satisfaction appears to influence how individuals use technology and uses of technology seem to influence partners' relationship satisfaction, the impact of intimacy-enhancing and intimacy-reducing uses of technology on relationship satisfaction have not been examined except in more severe circumstances. For example, Hertlein and Ancehta (2014) conducted an initial study of partners' uses of technology and the impacts of use on romantic relationships. They found that intimate

partners' uses of technology can positively and negatively impact their romantic relationships, although these findings were not correlated with couples' relationship satisfaction or other background personal and relationship characteristics. Similarly, Murray and Campbell (in press) conducted an initial study identifying both intimacy-enhancing and intimacy-reducing themes among peoples' technology use behaviors. Murray and Campbell (in press) found that individuals perceive their daily personal and professional uses of technology to both positively and negatively influence their relationship intimacy, yet these findings were not specifically correlated with individuals' relationship satisfaction or other pre-existing relationship dynamics. Therefore, it is uncertain whether couples overall relationship satisfaction is affected by intimacy-enhancing and intimacy-reducing patterns of technology use (Murray & Campbell, 2014).

Additionally, more extreme technology use behaviors are known to negatively impact relationship satisfaction (Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014). For instance, consider individuals who use technology as a platform to emotionally or sexually invest themselves into a relationship with another person, group, or activity that detracts from their relationship (Hertlein & Stevenson, 2010; Hertlein & Webster, 2008). Although there is evidence for the negative impact of technology use within such extreme circumstances, it is still unclear how the daily uses of intimacy-enhancing and intimacy-reducing technology behaviors impact relationship satisfaction.

The current study was designed to address the gap left by Hertlein and Blumer's (2014) CFT framework, Hertlein and Ancehta's (2014) study on technology behaviors and couples' relationships, and Murray and Campbell's (in press) study on technology

behaviors and couples intimacy by determining if there were identifiable groups of people based on individual and relationship characteristics. These variables include TR, couples communication, and intimacy-enhancing and intimacy-reducing uses of technology. In addition, this study was designed to determine the influence of selected demographic variables (i.e., relationship duration, age, gender) on group association, as well as to determine the effects of intimacy-enhancing and intimacy-reducing uses of technology on couples' relationship satisfaction.

### **Research Questions and Hypotheses**

The research questions and hypotheses for the current study were as follows:

#### **Research Question 1**

Are there distinct cluster groups among participants based on their scores on the measures of TR, couple communication, and the impacts of technology on relational intimacy (i.e., intimacy-enhancing impacts and intimacy-reducing impacts)?

**Hypothesis 1.** There will be four distinct cluster groups that emerge from the cluster analysis.

**Group 1.** Individuals with higher levels of TR, more positive communication skill, higher levels of intimacy-enhancing technology use, and lower levels of intimacy-reducing technology use.

**Group 2.** Individuals with lower levels of TR, more positive communication skills, moderate levels of intimacy-enhancing technology use, and moderate levels of intimacy-reducing technology use.

**Group 3.** Individuals with higher levels of TR, more negative communication skills, moderate levels of intimacy-enhancing technology use, and moderate levels of intimacy-reducing technology use.

**Group 4.** Individuals with lower levels of TR, more negative communication skills, lower levels of intimacy-enhancing technology use, and higher levels of intimacy-reducing technology use.

### **Research Question 2a**

If distinct groups emerge in the cluster analysis used to answer RQ1, are there significant differences between cluster groups based on the following demographic variables: age and relationship duration?

**Hypothesis 2a.** Significant differences between groups will not exist based on demographic variables age and relationship duration. Previous researchers have found that age (Campbell & Murray, in press; Coyne et al., 2011; Dijkstra et al., 2010) and relationship duration (Campbell & Murray, in press; Coyne et al., 2011) affect uses of technology. However, the variables of TR, couple communication, and intimacy-enhancing and intimacy-reducing uses of technology have not been studied together, and therefore specific hypothesized differences are unknown a priori. Thus, for the current study specific hypothesized differences are not speculated, and the null hypotheses will be tested as an exploratory examination of differences between groups.

### **Research Question 2b**

If distinct groups emerge in the cluster analysis used to answer RQ1, are there significant differences between cluster groups based on gender?

**Hypothesis 2b.** Significant differences between groups will not exist based on the demographic variable gender. Previous researchers have found that gender affects technology use (Dijkstra et al., 2010; Imhof et al., 2007; Parker & Wampler, 2003). Similar to the relationships with duration and age, specific hypothesized differences for groups based on gender are unknown a priori because the impact of the variables TR, communication skills, and intimacy-enhancing and intimacy-reducing uses of technology on gender has not been studied before. Therefore, hypothesis 2b will explore if the 4 hypothesized groups of individuals significantly differ on the variable gender, and the null hypothesis will be tested.

### **Research Question 3**

What proportion of participants' relationship satisfaction is explained by their intimacy-enhancing and intimacy-reducing impacts of technology?

**Hypothesis 3.** After controlling for age, relationship duration, and gender, technology use will still predict relationship satisfaction with (a) intimacy-enhancing technology positively related to relationship satisfaction, and (b) intimacy-reducing technology use negatively related to relationship satisfaction.

### **Need for the Study**

Technology advancements have become an integral part of North Americans' daily routines (Duggan, & Brenner, 2013; Rainie, 2010; Smith, 2012), altering intimate interactions within couples and families (Hertlein, 2012; Sprecher, 2009). The impact of technology on intimate relationships is multifaceted, such that the integration of technology into daily routines changes couples' interactions and provides additional

platforms for pre-existing face-to-face communication dynamics (Hertlein, 2012; Lanigan, 2009). Now, couples are confronted with the process of integrating technology into their daily routines and negotiating patterns of technology use so that both individuals are satisfied with their own and their partners' technology use behaviors.

Technology can provide platforms for partners to connect with and disconnect from one another (Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014; Murray & Campbell, in press). Technologies can be used to directly connect with one's partner (i.e., sending affectionate text messages). People who are more confident in their relationships are more likely to engage in positive communication (Guererro et al., 2009; Millwood & Waltz, 2009; Troy, 2000) and are hypothesized to use technology platforms to enrich their relationship connection. In contrast to technologies used for relationship connection, people can use technology to intentionally or unintentionally disconnect (Coyne et al., 2011; Coyne et al., 2012; Pettigrew, 2009). Unfortunately, for couples who already engage in negative face-to-face communication patterns, the accessibility to technologies and the anonymity and ambiguity of technology behavior has become other obstacles these couples must face and overcome (Hertlein, 2010). Thus, individuals with pre-existing relationship insecurities are more likely to engage in negative communication and negative technology behaviors that diminish intimate connections (Guererro et al., 2009; Millwood & Waltz, 2009; Troy, 2000)

Ineffective communication patterns and relationship distress are common symptoms of partners who enter into couples counseling (Gottman, 1999; Johnson, 2004). With increasing support for technology serving as one common platform of



communication within modern intimate relationships (Duggan, & Brenner, 2013; Rainie, 2010; Smith, 2012), couples are bound to bring more technology-related communication issues into counseling. Therefore, counselors are becoming more responsible for understanding the diverse types, trends, and functions of technology and the potential detrimental and beneficial impact of technology on couples' intimacy and relationship satisfaction (Campbell & Murray, in press; Hertlein, 2010; Young et al., 2000). As a result, a primary focus of couples counseling is focused on helping couples de-escalate heightened emotions and to develop positive and effective face-to-face and technology-mediated communication skills to increase their relationship satisfaction (Johnson, 2004; Young et al., 2000). Thus, this study contributes to counselors' clinical practice by informing counselors of individual and relational characteristics that influence partner's technology use, and informs counselors of the impacts of various uses of technology have on relational intimacy and relationship satisfaction.

The current study contributed to counselors' clinical practice in three major ways. The results informed counselors about the individual and relational characteristics of technology users that influence their technology use most within the dynamics of their intimate relationship. Results also inform counselors about the different types of technology engagement that can positively and/or negatively impact couples intimate relationships. A final result, outcomes of this study helped clinicians conceptualize the impact that individual uses of technology have on relationship satisfaction. Furthermore, results of this study contributed to pre-existing skill based interventions to improve couples' technology mediated interpersonal communication.

## **Definition of Terms**

*Relationship satisfaction* - an individual's felt degree of enjoyment, fulfillment, and contentment within a committed intimate relationship (Troy, 2000). For the purpose of this study, relationship satisfaction will be measured by the Relationship Assessment Scale (RAS; Hendrick, 1988).

*Negative communication* - inconsistent and conflicting patterns of communication that involve verbal and nonverbal, pursue and/or withdrawing behaviors (Christensen, 1987, 1988; Heavey, Larson, Christensen & Zomtobel, 1996). For the purpose of this study, negative communication will be measured by the Primary Communication Inventory (PCI; Locke et al., 1957; Navran, 1967).

*Positive communication* - consistent patterns of interactions where partners congruently communicate topics and issues, express feelings, and feel understood by one another while absent of verbal and nonverbal pursue and/or withdraw behaviors (Christensen, 1987, 1988; Heavey et al., 1996). For the purpose of this study, positive communication will be measured by the PCI (Locke et al., 1957; Navran, 1967).

*Intimacy* - partners' shared feelings of emotional, physical, spiritual, sexual, intellectual, and recreational closeness that develop through communication (Moss & Schwebel, 1993; Schaefer & Olson, 1981).

*Couple and Family Technology framework*- a general conceptualization for the multifaceted implications of technology use in daily life routines to couple and family systems (Hertlein, 2012; Hertlein & Blumer, 2014).

*Technology*- innovative equipment with specific functions that people use to achieve a goal (Parasuraman, 2000).

*Technology Readiness* - the tendency to accept and use new technologies to achieve goals in both personal and professional life (Parasuraman, 2000). For the purpose of this study, technology readiness will be measured by the Technology Readiness Index (TRI; Parasuraman, 2000)

### **Summary and Overview of Remaining Chapters**

This study is presented in five chapters. Chapter I served as an introduction to the rationale for the constructs of interest and gave a brief overview of the existing literature on the impact of technology use on relationship intimacy. The gap in the literature and the purpose of this study were established, as well as the statement of the problem and the need for this study. Research questions were outlined, and key terms were defined. Chapter II includes a review and critique of the relevant literature in order to provide support for the current study. Chapter III explains the methodology used in the study, while Chapter IV includes the results of the study. Chapter V is the final chapter and includes a thorough discussion of the results, implications for the field of counseling, limitations of the study, and future directions for this research.

## CHAPTER II

### LITERATURE REVIEW

In Chapter I, the rationale for a study on technology, communication, and couples' intimacy was introduced. Specifically, individual and relational characteristics that may influence how people view and use technology in relation to their intimate relationships were discussed. In this chapter, a review of the literature is presented to provide support for an examination of the interface between individual and relational characteristics, and the impact these characteristics have on uses of technologies that positively or negatively impact couples' intimacy. The literature review is presented in the following order: (a) prevalence of technology and technology use, (b) the impact of TR on technology use, (c) the impact of background characteristics on technology use, (d) communication in intimate relationships, (e) relationship satisfaction: connections to communication and technology use, (f) the impact of technology on intimate relationships, and (g) a conclusion.

#### **Prevalence of Technology and Technology Use**

In recent years, technology development and usage have flourished (Cole et al., 2009). Modern day society has become more accepting of technology use in personal and professional settings (Hertlein, 2012) as a result of technology becoming more accessible to and accommodating of people of all ages and their desired uses (Hertlein, 2012; Hertlein & Stevenson, 2010). Technology has become a platform for a variety of

purposes, including work, entertainment, information, and as part of people's interpersonal relationships (Coyne et al., 2011; Duggan, & Brenner, 2013; Pettigrew, 2009; Purcell, 2011a; Rainie, 2010; Smith, 2012). Overall, technology is an intricate part of people's daily lifestyles in modern society (Duggan, & Brenner, 2013; Rainie, 2010; Smith, 2012).

### **Modern Day Technology and Rates of Usage**

Within the past two decades, cell phones and the Internet are two examples of technologies that have transformed society (Fox & Rainie, 2014). In 2000, 53% of American adults owned and used cell phones (Fox & Rainie, 2014). Now, in 2014, about 90% of American adults own and use cell phones (Fox & Rainie, 2014); this represents a 37% increase in 14 years. Additionally, about 1 in 3 (34%) homes only use cell phones (i.e., they do not have a landline; Blumberg, Luke, Ganesh, Davern, & Boudreaux, 2012).

Similar to cell phone ownership and use, ownership of smartphones has grown from 35% in 2011 to 58% in 2014 (Fox & Rainie, 2014). The "smartphone" (e.g., an iPhone) includes basic cell phone functions, such as voice call and text messaging, but these devices also have the ability to access the Internet, email, video chat, and can include downloadable applications, including social media (e.g., Facebook) and dating sites (e.g., Tinder; Purcell, 2011a). In fact, about 68% of adults connect to the Internet through their mobile device (i.e., smartphone, iPhone, iPad) (Fox & Rainie, 2014).

Internet use is another example of technology that has grown extensively within the past two decades (Fox & Rainie, 2014). The foundation for the Internet was introduced in 1989 as an information management system (Fox & Rainie, 2014).

Decades later, the Internet has become a universal platform that provides people with access to several new communication and social systems (e.g., social media, video chat, instant messaging, chat rooms, Second Life, and email) that are instrumental in how people now interact with one another (Chesley, 2006; Coyne et al., 2012; Hertlein & Stevenson, 2010; Perry & Werner-Wilson, 2011; Neustaedter & Greenberg, 2012; Walker, Krehbiel, & Knoyer, 2009).

Additionally, using the Internet has become a primary work and leisure time activity for hundreds of millions of Americans (Fox & Rainie, 2014), and it is an intricate part of peoples' daily routines (Fox & Rainie, 2014). For example, in 1995, 14% of American adults used the Internet. Today, 85% of American adults use the Internet, representing a 73% increase in 19 years (Fox & Rainie, 2014). Similarly, in 2000, only 29% of Americans used the Internet on a daily basis. Now, 71% of American adults use the Internet on a daily basis, representing a 42% increase over the past 14 years (Fox & Rainie, 2014).

The rapid develop and integration of technology into the American lifestyle has created significant dependence on technology for personal and professional success. Thus, people report that many types of technology would be challenging to eliminate from their daily routines (Fox & Rainie, 2014). For example, 44% of cell phone users report that relinquishing use of their cell phone would be very challenging (Fox & Rainie, 2014). Additionally, 53% of Internet users report that the Internet would be extremely challenging to give up. Similarly, people report that giving up the use of email (36%)

and social media (11%) also would be very difficult to eliminate from daily routines (Fox & Rainie, 2014).

### **Technology Use in Couples' Relationship**

Technologies have become a communication platform for initiating, maintaining, and terminating friend, family, and intimate relationships (Hertlein, 2012; Hertlein & Blumer, 2014). At an individual level, 75% of Internet users report that online communication enhances their relationships (Fox & Rainie, 2014). Overall, most people (90%) view the Internet as having a positive impact on them personally, and 67% of people report that the Internet helps to strengthen their relationships (i.e., family, friendship, and romantic). At a societal level, 76% of people view the Internet as having a positive impact on society, while 15% of people view the Internet having a negative impact, and 8% report it has had both positive and negative impacts on society (Fox & Rainie, 2014). However, the extent to which social desirability may influence these findings remains unclear, as individuals may be hesitant to publicly acknowledge behaviors that negatively impact their relationship, such as excessive Facebook use or extensive use of pornography.

Recently, researchers have focused on better understanding the impact of technology on couples' intimacy (Campbell & Murray, in press; Hertlein, 2012; Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014; Murray & Campbell, in press). As couples have integrated new technologies into their daily interactions with one another (Hertlein, 2012; Hertlein & Blumer, 2014), two major ways that technology impacts intimate relationships are evident. First, technology mediums are outlets for pre-existing

relationship dynamics to manifest (Hertlein, 2012; Hertlein & Blumer, 2014). For example, satisfied couples are more likely to use technology platforms to communicate affectionate messages to one another to enhance their intimate connection (Coyne et al., 2011). In contrast, unsatisfied couples are more likely to use technology mediums to confront (Coyne et al., 2011), avoid (Coyne et al., 2012; Jin & Peña, 2010), or to check-up on their partner (Dijkstra et al., 2010; Duran et al., 2011; Schnurr et al., 2013). Thus, relationship dynamics contribute to how couples integrate technology into their relationships (Hertlein, 2012; Hertlein & Blumer, 2014; Perry, & Werner-Wilson, 2011; Pettigrew, 2009).

Second, the integration of new technology platforms into couples' relationships can positively or negatively impact their levels of relational intimacy (Hertlein, 2012; Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014; Murray & Campbell, in press). For some couples, the integration of interactive technology mediums such as cell phones, video chat systems, and e-mail can enhance feelings of closeness and intimate connection with one's partner (Coyne et al., 2011; Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014; Murray & Campbell, in press; Pettigrew, 2009). In contrast, specific characteristics of new technologies, such as anonymity, affordability, acceptance, and accessibility, can create new obstacles for couples to navigate and overcome (Hertlein & Blumer, 2014; Hertlein & Stevenson, 2010; Hertlein & Webster, 2008).

Although evidence exists for the impact of technology use on couples' intimacy, the individual and relational characteristics that contribute to how people view and use technology and the overall impact technologies have on couples' intimacy are not clearly



defined in current literature. Thus, the purpose of the current study is to test individual and relational variables (i.e., TR, communication skills, and intimacy-enhancing and intimacy-reducing impacts of technology) in order to better understand the factors that contribute to differences in how partners use technology and how technology use effects intimate relationships.

### **The Impact of Technology Readiness on Technology Use**

In this section, a detailed description of the variable, TR, is provided. The researcher will define TR, followed by a discussion of how TR is measured. Next, the researcher will describe the methodological strengths and limitations in previous research studies on TR. Then, the researcher will identify how the current study will address these limitations.

### **Technology Readiness**

Technology readiness was first described 14 years ago in the service and marketing literature (Parasuraman, 2000). Technology readiness is described as individuals' inclination to accept and use new technologies to achieve goals in both their personal and professional lives (Matthing, Kristensson, & Gustofsson, 2006; Parasuraman, 2000). This variable is used to describe individuals' overall beliefs toward technology, including individual views of and beliefs in technology (Parasuraman & Colby, 2001). This variable is not used to describe peoples' *ability* to use technology (Parasuraman & Colby, 2001). There are four technology dimensions used to categorize and describe levels of TR.

**Technology readiness dimensions.** People react to and use technologies differently, based on their willingness to accept and embrace new technologies, as well as their individual level of comfort and confidence with incorporating technologies (Parasuraman, 2000; Parasuraman & Colby, 2001; Rose & Fogarty, 2010). The four TR dimensions were developed to conceptualize peoples' varying differences for accepting and using new technologies. Specifically, individuals' views of and relation to technology were reduced into the following four dimensions: *Optimism*, *Innovativeness*, *Discomfort*, and *Insecurity*. These dimensions conceptualize individuals' willingness to adopt new technologies (Parasuraman, 2000; Parasuraman & Colby, 2001).

Table 2

Four Dimensions that Explain Individual Technology Readiness (Parasuraman, 2000)

Technology Dimension	Description of Technology Dimension	Sub-Dimension
1. Optimism	"A positive view of technology and a belief that it offers people increased control, flexibility, and efficiency in their lives" (Parasuraman, 2000, p. 311).	Driver
2. Innovativeness	"A tendency to be a technology pioneer and thought leader" (Parasuraman, 2000, p. 311).	Driver
3. Discomfort	"A perceived lack of control over technology and a feeling of being overwhelmed by it" (Parasuraman, 2000, p. 311).	Inhibitor
4. Insecurity	"A distrust of technology and skepticism about its ability to	Inhibitor

	work properly” (Parasuraman, 2000, p. 311).	
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***Optimism.*** The optimism dimension describes the extent to which people hold a positive view of technology (Parasuraman, 2000; Rose & Fogarty, 2010). Individuals who are high in optimism believe that technologies enhance peoples’ personal and professional lifestyles by providing more opportunities and increasing efficiency and productivity in daily routines. Highly optimistic technology users are confident in their technology skills, such that they feel a sense of control and power over technology. These individuals are motivated to explore and understand new technologies to enhance their own knowledge and comfort with using technology, as well as to reap the most benefits from technologies. Overall, highly optimistic technology users are drivers of technology; they believe technology development makes life better by enhancing efficiency, flexibility, and productivity (Parasuraman, 2000; Rose & Fogarty, 2010).

***Innovativeness.*** Similar to the optimism dimension, the innovativeness dimension describes the extent to which technology users hold a positive view of technology (Parasuraman, 2000; Rose & Fogarty, 2010). The primary difference between optimism and innovativeness dimensions is based on leadership. Overall, people who score high in the innovativeness dimension are considered the leaders of new technologies. Specifically, these individuals are considered the creators of new ideas and developers of new technology devices and services, as well as the frontrunners for trying and incorporating new technologies into their daily routines. Additionally, highly innovative technology users are motivated to explore and understand new technologies.

In particular, these people aim to increase their confidence in their own technology skills so that they can teach others how to use and enjoy new technologies. Overall, highly innovative technology users are drivers of technology advances, such that they develop new technologies, trust in technology devices and services, and feel comfortable using and teaching others how to use technology (Parasuraman, 2000; Rose & Fogarty, 2010).

***Discomfort.*** In contrast to optimism and innovativeness dimensions, the discomfort dimension describes the extent to which people have negative views of technology (Parasuraman, 2000; Rose & Fogarty, 2010). Technology users who score high in the discomfort dimension experience a pervasive level of distress when using technology. Specifically, these people lack confidence in their technology usage skills. Therefore, the idea of using new technology is anxiety-provoking for these people; consequently, technology users with high levels of discomfort are easily overwhelmed by new technologies. As a result of their anxiety, these people are not accepting of or willing to use or incorporate new technologies into their daily routines. Overall, technology users with high levels of discomfort are inhibitors of technology; they resist using new technology to avoid feeling overwhelmed, out of control, and incompetent (Parasuraman, 2000; Rose & Fogarty, 2010).

***Insecure.*** Similar to the discomfort dimension, the insecure dimension also describes the extent to which people hold a negative view of technology. The primary difference between discomfort and insecure dimensions is the emphasis on distrust. Technology users with high levels of discomfort distrust *themselves*, while insecure technology users distrust *technology* devices and services (Parasuraman, 2000; Rose &

Fogarty, 2010). Specifically, technology users who score high in the insecure dimension are skeptical that new technologies will work properly. In fact, they are more confident that using new technologies will negatively impact them. Insecure technology users will need to be convinced of the safety and benefits of using technologies before incorporating technology into their daily routines. Overall, insecure technology users are inhibitors of technology; they will avoid, at various intensities, using technology devices and services for fear that the technology will not be effective or efficient (Parasuraman, 2000; Rose & Fogarty, 2010).

**Measuring technology readiness.** The TRI was created to conceptualize individuals' state of mind and identify their views of and willingness to embrace or reject new technology (i.e., TR) (Parasuraman, 2000; Parasuraman & Colby, 2001). Individuals' scores on the 10-item TRI can range by 40 points (i.e., TRI scores can range from negative eight to 32). Higher scores imply greater openness to using technology. Further, total TR scores represent individuals' willingness to embrace and incorporate technology into their daily lives (Parasuraman, 2000; Parasuraman & Colby, 2001).

**History of technology readiness research.** The study of TR originated in the service and marketing literature (Parasuraman, 2000) and continues to be primarily researched within these disciplines. The construct, TR, has been studied to (a) better understand adopters vs. non-adopters of technologies (Matthing et al., 2006), (b) better understand and enhance customer satisfaction with technology devices and services (Lin, 2006; Massey, Khatri, & Montoya-Weiss, 2007), and (c) enhance marketing strategies of

new technologies to potential customers (Lam, Chiang, & Parasuraman, 2008; Massey et al., 2007; Rose & Fogarty, 2010).

The variable TR can be used to gauge people's willingness to adopt new technologies (Matthing et al., 2006), differentiate between satisfied and non-satisfied technology users (Lin, 2006), and describe characteristics of people who are more likely to use specific types of technologies (Lin, 2006; Massey et al., 2007; Rose & Fogarty, 2010). For instance, *adopters* and *satisfied* technology users score higher on optimistic and innovativeness TR dimensions and are described as individuals who (a) view technology positively (Lin, 2006; Massey et al., 2007), (b) care most about the obtained benefits of using technology (Massey et al., 2007), (c) generate new ideas and solve technology problems to further develop technology (Lin, 2006; Massey et al., 2007), (d) easily understand and use technologies (Lin, 2006; Massey et al., 2007), (e) assist others with learning and using new technologies (Matthing et al., 2006), and (f) appreciate the quality of advanced technology (Lin, 2006; Massey et al., 2007). Marketing ads that focus on the benefits of technology would target these individuals (Lin, 2006; Massey et al., 2007).

In contrast to adopters and satisfied technology users, *non-adopters* and *unsatisfied* technology users score lower on TR and are described as individuals who (a) view technology negatively (Lin, 2006; Massey et al., 2007), (b) struggle to understand and use technology (Lin, 2006; Massey et al., 2007), (c) hesitate or resist adopting new technologies into their daily routines (Matthing et al., 2006), and (d) unsatisfied with technology quality (Lin, 2006; Massey et al., 2007). Marketing ads that focus on the

content used to describe new technologies would target these individuals (Lin, 2006; Massey et al., 2007).

In summary, the study of TR has resulted in a better understanding of individuals' willingness to adopt new technology, individuals' satisfaction with technology use, and individuals' preferred type of technology (Massey et al., 2007; Rose & Fogarty, 2010). Although there is research that empirically supports the relationships between TR and individuals' view and uses of technologies (Lin, 2006; Massey et al., 2007; Rose & Fogarty, 2010), there also are limitations to this research. Previous research trends on TR have been limited to assessing TR on an individual level. Particularly, the influence of TR on individuals' view and uses of technology within their intimate relationships is unknown. Therefore, TR as it relates to relational dynamics, and specifically to intimate relationships, has not been examined in previous research. This is a significant limitation because technology has become a primary platform for day-to-day interpersonal interactions within couple relationships (Blinn-Pike, 2009; Hertlein & Blumer, 2014; Lanigan, 2009). As a result of the numerous relational uses of technology, evaluating how individuals' TR relates to intimate relationship characteristics is important for understanding how individuals' attitudes toward technology intersect with their relationship functioning.

Furthermore, because technologies have become primary mediums of communication for intimate relationships (Hertlein, 2012; Hertlein & Blumer, 2014; Murray & Campbell, in press), gaining an understanding of peoples' TR as it relates to couples' communication skills and technology behaviors that enhance or hinder couples'

intimacy, is important. The current study will use the variable TR to evaluate peoples' views toward and willingness to embrace and incorporate new technology mediums into their daily routines, within the context of their intimate relationships. The use of the 10-item version of the TR will be implemented to assess TR in this study.

### **The Impact of Background Characteristics on Technology Use**

Beyond TR, research suggests that other personal (i.e., age and gender) and relational (i.e., relationship duration and satisfaction) background characteristics may impact the intersections of technology and relationship functioning.

#### **Personal Background Characteristics**

Previous research suggests that age and gender are two personal background characteristics that impact individuals' views toward technology.

**Age.** Age can influence how people view and use technology in their intimate relationships (Campbell & Murray, in press; Coyne et al., 2011). However, the ways that researchers have defined age group categories have varied among studies. Therefore, it is difficult to draw comparisons across studies. For example, the Pew Research Internet Project defines younger populations as teens (14-17 years old) and young adults (18-29 years old), while McMahon & Pospisil (2005) referred to younger population as those born within the millennial age range (i.e., individuals born in 1982 or after). For this reason, however, people will be referenced as younger and older individuals with the understanding that it is relative to the particular population in each study.

In general, the Pew Research Internet Project has consistently found that younger populations view technologies more positively and use technologies more often in their



daily routines than older populations (Lenhart, 2010; Lenhart & Doggan, 2014; Smith, Rainie, & Zickuhr, 2011; Zickuhr & Smith, 2012). Specifically, Coyne et al., (2011) found that younger people are more likely to use various forms of technologies such as phone calls, text messages, social network sites (SNS), and other Internet forms of communication. Additionally, younger individuals also use technologies more frequently to communicate with their partner (Coyne et al., 2011).

Similarly, Campbell and Murray (in press) examined the relationship between age and participants' scores on the Technology and Intimate Relationship Assessment (TIRA; Campbell & Murray, in press). The TIRA is a 22-item instrument created to assess for uses of technology that enhance and/or reduce couples' relational intimacy (Campbell & Murray, in press). Younger individuals demonstrated higher scores on both the Intimacy-Enhancing and the Intimacy-Reducing subscales for uses of technology. Thus, these findings also support Coyne et al. (2011) and the Pew Research (Lenhart, 2010; Lenhart & Doggan, 2014; Smith et al., 2011; Zickuhr & Smith, 2012) in that younger individuals use technologies more frequently, and have higher reports for both the positive and negative impacts on their relationships (Campbell & Murray, in press). Overall, research trends suggest that age contributes to individuals' views and uses of technology (Lenhart, 2010; Lenhart & Doggan, 2014; Smith et al., 2011; Zickuhr & Smith, 2012).

**Gender.** Gender is defined as the degree to which a society categorizes a person as “male” or “female” based on their masculine or feminine biological sex traits (“American Psychological Association”, 2014). Gender identity is defined as the degree to which a person self-identifies with masculine and/or feminine traits and assigns oneself

to the category of male, female, or transgender (“American Psychological Association”, 2014). For the purpose of this study, the researcher will use the word “gender” when referencing participants’ “gender identity”. Therefore, “gender” describes ones’ self-identification as male, female, or other in which case may or may not be congruent with a person’s biological sex. Although, it is important to also mention that previously, researchers may have used the word gender instead of sex or used these two words interchangeably, and previous literature is used to outline the current study.

Research trends indicate that gender impacts how people view and use technology, with most research having focused on the Internet (Coyne et al., 2012; Dijkstra et al., 2010; Fallows, 2005; Imhof et al., 2007; Papp et. al., 2012; Parker & Wampler, 2003; Whitty, 2005). Therefore, gender is an important variable to consider when assessing for demographic variables that impact technology use behaviors in intimate relationships.

Although differences in technology use based on gender appear to be decreasing, research suggests that men and women view and use computers and the Internet somewhat differently (Imhof et al., 2007). Imhof et al. (2007) studied differences in computer-related behaviors (specifically, differences among peoples’ computer use, motivation, and access), and computer behavior, particularly frequency and motivation, were found to be contingent on gender. Specifically, males used the computer for personal reasons more than women did, while women used computers for task completion more than men did (Imhof et al., 2007).

Similarly, the Pew Research Internet Project also found slight gender differences related to Internet (Fallows, 2005; Zickhur & Smith, 2012) and cell phone use (Lenhart, 2010; Purcell, 2011b). In regards to Internet use, men were found to use the Internet more intensely than women (Fallows, 2005; Zickhur & Smith, 2012). For example, men used the Internet more on a daily basis and used the Internet more frequently within a day. Additionally, men used the Internet for more variety of activities, particularly more for transactions, information gathering, and entertainment. Women, however, used the Internet more for communicating with others, particularly, friends, family, partner, and colleagues. Specifically, women sent and received more emails, both personally and professionally, and valued this communication platform more than men (Fallows, 2005; Zickhur & Smith, 2012).

With regards to cell phones, Lenhart (2010) found slight differences between men and women users. For example, men were slightly more likely to own a cell phone and a smartphone, make more phone calls, and download more applications on their phones than women (Purcell, 2011b). No gender differences, however, existed in relation to sending and receiving text messages (Lenhart, 2010).

In addition to the impacts on computer, Internet, and cell phone use, gender has been shown to impact how individuals perceive their partners' technology use (Coyne et al., 2012; Dijkstra et al., 2010; Papp et. al., 2012; Parker & Wampler, 2003; Whitty, 2005). Overall, Whitty (2005) found that women were more likely to perceive their partners' technology behaviors as an emotional or sexual investment in other people. As a result, women were more distressed and distrusting of their partners' uses of technology

(Dijkstra et al., 2010; Parker & Wampler, 2003). If, in fact, their partner was involved emotionally or sexually with another person through technology (i.e., an affair), this too resulted in women having higher distressed responses than men (Dijkstra et al., 2010).

Recently, Coyne et al. (2012) studied the impacts of online video gaming on couples' conflict and aggression toward one another. Women responded more negatively to their partners' use of online gaming. Specifically, women who perceived the gaming to take quality time away from their relationship became more distressed, particularly feeling jealous and resentful of their partner for investing their time into the game and developing relationships with other gamers (Coyne et al., 2012).

In addition, Papp et al. (2012) examined the impacts of gender on one's public display of relationship status via social media (Papp et. al., 2012). Papp et al. (2012) discovered that men and women placed different levels of importance on their public portrayals of their relationship status. Women placed more importance on sharing their relationship status in social media, and women were more distressed if their partner did not place the same level of importance on displaying their relationship status in social media. As a result, gender contributed to couples' satisfaction with one another's social media use (Papp et al., 2012). In general, gender appears to impact individuals' views and uses of technology (Coyne et al., 2012; Dijkstra et al., 2010; Fallows, 2005; Imhof et al., 2007; Papp et. al., 2012; Parker & Wampler, 2003; Whitty, 2005; Zickhur & Smith, 2012).

### **Relationship Background Characteristic: Relationship Duration**

Previously, researchers have examined the impact of partners' relationship duration on their perspectives toward technology. Specifically, relationship duration influences individuals' views and uses of technology (Campbell & Murray, in press). Therefore, relationship duration is an important relational variable to consider when assessing for background characteristic impacts on peoples' technology use.

Relationship duration is defined as the amount of time, in years and months; that couples have spent in their committed relationship (Campbell & Murray, in press; Coyne et al., 2011). Relationship duration is a relational demographic variable that has been found to influence technology use in couples' relationships (Campbell & Murray, in press; Coyne et al., 2011). Specifically, relationship duration may impact partners' frequency of and reasons for technology use in their intimate relationships (Coyne et al., 2011), as well as impact partners' use of positive and negative communication (Coyne et al., 2011) and intimacy-enhancing and intimacy-reducing uses of technology (Campbell & Murray, in press).

Coyne et al. (2011) studied the types of technology that couples use to communicate with one another, the frequency of use, partners' motives for use, and the relationship between technology use and couples' positive and negative communication. Overall, relationship duration impacted frequency of use and motives for media use. Coyne et al. (2011) defined longer-lasting relationships as couples that were in relationships for one or more years, and newer relationships as those in which couples had been together for less than 1 year. The couples who were in longer-lasting

relationships, overall, used technology less to communicate with one another and with other people. Additionally, when individuals in longer-lasting relationships used technology to communicate with one another, they communicated affectionate messages with the intention of enhancing their intimate connection with their partners. Conversely, people who were in newer relationships used technologies to communicate more with their partners, as well as used technologies to convey hurtful messages, discuss confrontational subjects, and apologize to their partners. In sum, relationship duration impacted technology use behaviors, specifically related to frequency of and motivations for communication (Coyne et al., 2011).

More recently, Campbell and Murray (in press) conducted a study to develop an instrument for measuring intimacy-enhancing and intimacy-reducing uses of technology (Note: the instrument will be described in greater detail later in this chapter). In addition to creating this instrument, Campbell and Murray used correlation analyses to examine the relationship between relationship duration and the positive and negative impacts of technology on their relationships. Their findings showed that individuals in longer-lasting relationships scored lower on both the Intimacy-Enhancing subscale and Intimacy-Reducing subscale. In contrast, individuals in newer relationships scored higher on both the Intimacy-Enhancing and Intimacy-Reducing subscales. Thus, couples in newer relationships were more likely to perceive technology use to positively and negatively impact their intimate relationship. Therefore, couples in longer-lasting relationships may not use technology as often as younger couples, and may use technology less to communicate with their partner. These results support previous

research conducted by Coyne et al. (2011). Although, not explicitly stated in the research literature, it is plausible that the age of the technology user may confound these results.

Overall, partners' time spent in a committed relationship contributes to a broader understanding of individual technology use in intimate relationships. In particular, relationship duration impacts the frequency of and reasons for using technologies to communicate with one another (Campbell & Murray, in press; Coyne et al., 2011). Additionally, relationship duration influences peoples' perceptions of technology use that enhances or reduces their relational intimacy (Campbell & Murray, in press).

Furthermore, uses of technologies in intimate relationships are related to individuals' personal and relational background characteristics (Coyne et al., 2011; Coyne et al., 2012; Dijkstra et al., 2010; Fallows, 2005; Imhof et al., 2007; Papp et. al., 2012; Murray & Campbell, in press; Parker & Wampler, 2003; Whitty, 2005; Zickhur & Smith, 2012). Therefore, gaining an understanding of individuals' age, gender, and relationship duration as it relates to partners' views of technology, communication skills, and technology use behaviors that enhance or hinder couples' intimacy is important. The current study will examine how individuals' age, gender, and relationship duration impact their views toward and willingness to embrace and incorporate new technologies into their daily routines, within the context of their intimate relationships.

As a result of the thorough literature review, the researcher found that the effects of individuals' personal and relational characteristics on the intersection of individuals' TR, couple communication, and intimacy-enhancing and intimacy-reducing uses of technology remain unexamined. Although, previous researchers have examined the links

between some combination of these variables on technology use behavior, communication, and impacts of technology use on relational intimacy (Campbell & Murray, in press; Coyne et al., 2011; Coyne et al., 2012; Dijkstra et al., 2010; Fallows, 2005; Imhof et al., 2007; Lenhart, 2010; Lenhart & Doggan, 2014; Papp et. al., 2012; Parker & Wampler, 2003; Smith et al., 2011; Whitty, 2005; Zickuhr & Smith, 2012). Therefore, it will be important to separately examine the direct impacts of participants' personal and relationship characteristics on their levels of TR, couple communication, and the intimacy-enhancing and intimacy-reducing uses of technology. Future implications for the effects of individual and relational variables on TR, couple communication, and intimacy-enhancing and intimacy-reducing uses of technology, separately, will be discussed in Chapter V.

### **Communication in Intimate Relationships**

In this section, a detailed description of couple communication is provided. Couples' positive and negative communication skills and the impact communication has on uses of technology are examined. First, the researcher defines couple communication, positive communication, and negative communication. Next, the researcher summarizes themes in previous research studies on communication in intimate relationships, particularly positive and negative communication. In addition, the researcher explores the literature on uses of technology as a form of communication in couples' relationships. Finally, the researcher will identify the strengths and limitations to previous research and articulate how the current study will address these limitations.



## **Couple Communication**

Intimate partners' interpersonal communication patterns provide a window for understanding their relationship functioning. Couple communication can be described as intimate partners' unique and routine patterns of verbal and nonverbal, and positive and negative interpersonal interactions (Christensen, 1987, 1988; Heavey et al., 1996). A large body of research supports the important role that couple communication plays in determining the overall quality of their relationship, by cultivating affection or creating conflict between partners (Gottman, 1999; Laurenceau et al., 2005; Markman et al., 2010). A full review of this large body of research, however, is beyond the scope of this dissertation; thus, main themes will be summarized here, with a focus on major findings about positive and negative communication patterns.

**Positive communication.** Positive communication can be described as consistent patterns of interactions in which people openly and congruently communicate about topics and issues, identify and express feelings in a non-blaming, non-defensive, and non-reactive fashion, and result with individuals feeling attended to, heard, and understood by one another and is typically absent of anxious and avoidant behaviors (Christensen, 1987, 1988; Heavey et al., 1996). Other words used interchangeably to describe positive communication are effective, constructive, and successful communication. Partners who engage in positive patterns of communication can de-escalate negative interactions when distressed (Guerrero et al., 2009; Millwood & Waltz, 2008) and foster healthier relationships that result in greater relationship satisfaction (Brashier & Hughes, 2012; Guerrero et al., 2009; Mackey, Diemer, & O'Brien, 2004; Osgarby & Halford, 2013;

Troy, 2000), including greater intimacy (Laurenceau et al., 2005; Osgarby & Halford, 2013; Yoo, Bartle-Haring, Day, & Gangamma, 2013), and greater sexual satisfaction (Byers, 2005; Montesi et al., 2011; Theiss, 2011). Therefore, the overall quality of the relationship is greater and more stable for partners who use positive communication.

**Negative communication.** In contrast to positive communication, negative communication can be described as inconsistent and conflicting patterns of communication that involve verbal and nonverbal, aggressive and passive aggressive, pursue/withdraw behaviors, and result with individuals feeling unheard and misunderstood (Christensen, 1987, 1988; Heavey et al., 1996). Other words commonly used to describe negative communication are ineffective, deconstructive, and poor communication. As a result of negative patterns of communication, partners can experience difficulties de-escalating and effectively communicating when in distress (Christensen & Heavey, 1990; Guerrero et al., 2009; Millwood & Waltz, 2008). Negative communication hinders intimate relationships by reducing relationship satisfaction (Brashier & Hughes, 2012; Guerrero et al., 2009; Idemudia and Ndlovu, 2013; Mackey et al., 2004; Rehman & Holtzworth-Munroe, 2007; Osgarby & Halford, 2013; Troy, 2000), intimate connection (Laurenceau et al., 2005; Osgarby & Halford, 2013; Yoo et al., 2013), and sexual satisfaction (Byers, 2005; Montesi et al., 2011; Theiss, 2011). Therefore, the overall quality of the relationship is distressed and less stable for partners who engage in negative communication patterns.

## **Technology as a Means of Communication**

In modern day society, technologies have become more complex communication platforms that people, particularly intimate partners, must learn to navigate (Hertlein, 2012; Hertlein & Blumer, 2014; Miller-Ott, Kelly, & Duran, 2012; Neustaider & Greenberg, 2011; Perry, & Werner-Wilson, 2011; Pettigrew, 2009). Technology has become a platform for direct and indirect communication for partners in intimate relationships. Often, partners use technology to directly communicate for managing and planning daily activities (Lanigan, 2009; Murray & Campbell, in press), communicating affection (Hertlein & Ancheta, 2014; Murray & Campbell, in press), discussing sexuality (Murray & Campbell, 2014) and controversial topics (Coyne et al., 2011), maintaining and terminating relationships (Baker, 2002; Hertlein & Blumer, 2014; Hertlein & Ancheta, 2014; Murray & Campbell, in press; Neustaider & Greenberg, 2011), and sharing information and interests (Hertlein, 2010; Murray & Campbell, 2014).

Conversely, the reasons for technology use (Coyne et al., 2011), the type of technology used (Coyne et al., 2011), and the time investment in technology platforms (Coyne et al., 2012) can indirectly communicate messages to partners. Frequently, couples are unaware of what their technology behaviors are indirectly communicating to their partner (Coyne et al., 2011; Coyne et al., 2012). Furthermore, the interpretation and impact of partners' direct and non-direct uses of technology are to be considered specific to each couple.

As such, partners' face-to-face patterns of communication can transfer into their technology-facilitated communication (Perry & Werner-Wilson, 2011). As couples have integrated technology into their daily interpersonal interactions, technology has become a

new outlet for pre-existing dynamics to emerge (Coyne et al., 2011; Weisskirch, 2012); particularly, intimate partners' pre-existing patterns of communication can emerge through technology. For example, a study on couples' technology use and relationship satisfaction found partners who had satisfying relationships were more likely to use technology to connect with their partners by communicating affectionate text messages (Coyne et al., 2011). In contrast, intimate partners who had unsatisfying relationships were more likely to use technology to confront their partners and discuss controversial topics (Coyne et al., 2011). Similarly, partners who were more secure and autonomous in their relationships also used technologies differently to communicate with their partners, as opposed to partners who are more insecure in their relationship (Duran et al., 2011; Weisskirch, 2012). In particular, more anxious and less autonomous partners may excessively use technology to pursue their partners in order to fulfill their anxious needs to feel close and connected. In contrast, more avoidant partners may withdraw and avoid initiating technology-facilitated communication, as well as avoid responding to their partners' technology-mediated communication to alleviate the fear of being too close (Duran et al., 2011; Wisskirch, 2012).

In some cases, individuals' patterns of technology use can indirectly communicate messages to their partners (Coyne et al., 2011; Coyne et al., 2012). As previous research implies, partners' reasons for technology use, the types of technology used, and the time invested in using technology platforms can indirectly communicate messages to intimate partners (Coyne et al., 2011; Coyne et al., 2012). For instance, Coyne et al. (2012) did not assess for relationship satisfaction, couples' communication, or other relational

variables directly; however, results of this study suggest that partners' use of online gaming indirectly negatively impacted their partners. More specifically, gaming partners' time investment in online gaming was associated with feelings of jealousy, anger, and resentment in their non-gaming partners, because the time invested in gaming significantly reduced the intimate time partners shared together. As a result, partners' time investment with gaming media could be an outcome of relational avoidance or a desire to connect with other people. Consequently, online gaming was positively associated with partners' conflict (Coyne et al., 2012). Thus, individual use of technology can communicate non-verbal messages to their partner and most important, the interpretation of these non-verbal messages are specifically related to couples' pre-existing relationship dynamics (Coyne et al., 2011; Coyne et al., 2012; Weisskirch, 2012).

Overall, couples may engage in positive and/or negative communication patterns (Markman et al., 2010). Numerous studies empirically support the association between positive and negative communication patterns on overall relationship quality (Gottman, 1999; Laurenceau et al., 2005; Markman et al., 2010) and relationship satisfaction (Allen et al., 2008; Brashier & Hughes, 2012; Troy, 2000). Additionally, more recent research trends empirically support the notion that technologies are used as new communication channels that partners use to interact with one another on a daily basis (Coyne et al., 2011; Hertlein & Blumer, 2014; Neustaedter & Greenberg, 2011; Perry, & Werner-Wilson, 2011; Pettigrew, 2009). Moreover, technology has become another outlet for couples' pre-existing communication dynamics to emerge (Coyne et al., 2011; Coyne et

al., 2012; Dijkstra et al., 2010; Duran et al., 2011; Schnurr et al., 2013; Hertlein, 2012; Hertlein & Blumer, 2014; Wisskirch, 2012).

Although partners' face-to-face communication has been found to transfer over to their technology-facilitated communication (Perry & Werner-Wilson, 2011), there are also limitations to this research. For several years, social science researchers have focused on assessing the relationships between couple communication and several other relationship variables, including, but not limited, to relationship satisfaction (Brashier & Hughes, 2012; Guerrero et al., 2009; Idemudia & Ndlovu, 2013; Mackey et al., 2004; Osgarby & Halford, 2013; Rehman & Holtzworth-Munroe, 2007; Troy, 2000), relationship quality (Gottman, 1999; Laurenceau et al., 2005; Markman et al., 2010), sexual satisfaction (Byers, 2005; Montesi et al., 2011; Theiss, 2011), intimacy (Laurenceau et al., 2005; Osgarby & Halford, 2013; Yoo et al., 2013), and attachment style (Collins, 1996; Guerrero et al., 2009; Millwood & Waltz, 2008; Shi, 2003). More recently, researchers have begun to address partners' technology interactions with other relational variables, such as relationship satisfaction (Coyne et al., 2011; Miller – Ott et al., 2012), relational intimacy (Hertlein, 2011; Hertlein & Blumer, 2014; Hertlein & Achea, 2014; Murray & Campbell), and sexual satisfaction (Lambert, Negash, Stillman, Olmstead, & Fincham, 2012). However, there are significant elements to the relationship between couple communication and their uses of technology that have not been addressed thoroughly in current research.

First, technology adds another element of non-verbal communication to intimate interpersonal interactions that is not present in partners' face-to-face communication.

Technology-facilitated communication can create challenges for intimate partners to express non-verbal cues to their partners or observe non-verbal cues from their partners (Helsper & Whitty, 2010; Pettigrew, 2009). In particular, technology-facilitated communication can lead to partners misinterpreting the context or meaning of messages (Perry & Werner-Wilson, 2011; Pettigrew, 2009). Assessing for couples' predisposed patterns of interpersonal interaction (i.e., relational communication) will portray how intimate partners' function in their relationships, particularly in response to verbal and non-verbal technology-facilitated communication. Additionally, quantifying couple communication will advance research literature by associating couples' pre-existing patterns of relational communication to the integration and uses of technology in their intimate relationships.

Second, the impact of couple communication on uses of technology has not been directly assessed directly. It is expected that couples' use of technology-facilitated communication will create more conflict for partners who already have pre-existing negative communication patterns or enhance relationship satisfaction for couples with pre-existing positive communication patterns. Very few studies, however, empirically support the influence of relational variables, particularly couple communication, on the integration and uses of technology in intimate relationships (Coyne et al., 2011; Wisskirch, 2012). Other researchers (i.e., Hertlein, 2012; Hertlein & Blumer, 2014) fail to include the role of pre-existing relationship dynamics altogether. For instance, the integration of technology into partners' daily interactions effects their intimacy (Hertlein, 2011; Hertlein & Blumer, 2014; Hertlein & Ancheta, 2014, Murray & Campbell, in

press); however, relational characteristics that can help explain partners' uses of technology that positively or negatively impact their relationship were not explored. A need exists for research examining the direct impacts of couples' communication patterns on their uses of technology.

In summary, in several studies that assess for the relationship between couples' use of technology and other relational variables, couple communication has not been specifically addressed. Therefore, the current study will address this gap by assessing for the variable, couple communication, to evaluate the influence of partners' positive and negative communication on their uses of technology and the overall impact on relational intimacy. Specifically, the current study will test for the intersection between partners' positive and negative communication, individual TR, and intimacy-enhancing and intimacy-reducing uses of technology, to determine if partners' communication patterns contribute to their uses of technology and the impacts technology use has on their relational intimacy. Couple communication will be measured by the PCI (Locke et al., 1957; Navran, 1967).

### **Relationship Satisfaction: Connections to Communication and Technology Use**

Relationship satisfaction is an individual's felt degree of enjoyment, fulfillment, and contentment within a committed intimate relationship (Troy, 2000). A substantial body of research exists that examines various contributors to and consequences of relationship satisfaction, and a full review of this research is beyond the scope of this dissertation. However, given the current study's focus on the variables of couple communication and technology use, this section will provide a brief summary of research



examining the connections between (a) positive and negative couple communication patterns and relationship satisfaction and (b) technology use and relationship satisfaction.

### **The Impact of Couple Communication on Relationship Satisfaction**

A considerable body of research suggests that couple communication effects partners' relationship satisfaction (Brashier & Hughes, 2012; Guerrero et. al., 2009; Mackey et al., 2004; Osgarby & Halford, 2013; Troy, 2000). In fact, three themes from research on couple communication and partners' relationship satisfaction are evident: (a) couple communication and relationship satisfaction are related (Markman et al., 2012), (b) positive communication positively impacts relationship satisfaction, and (c) negative communication negatively impacts relationship satisfaction (Brashier & Hughes, 2012; Guerrero et. al., 2009; Mackey et al., 2004; Osgarby & Halford, 2013; Troy, 2000).

**Couple communication and relationship satisfaction.** Previously, researchers have suggested that couple communication and intimate partner relationship satisfaction are related (Brashier & Hughes, 2012; Guerrero et al., 2009; Idemudia & Ndlovu, 2013; Markman et al., 2010a; Osgarby and Halford, 2013; Rehman & Holtzworth-Munroe, 2007). Recently, Markman et al. (2010) studied the relationship between the quality of pre-marital communication and post-marital distress and divorce. In general, partners' premarital self-reports on their negative communication predicted couples who divorced within five years of their marriage. Partners who reported that they used more positive communication felt greater satisfaction in their relationship and were also more likely to still be married. In contrast, partners who reported using more negative communication were more likely to experience relationship distress and be divorced (Markman et al.,

2010). Other studies on couple communication and relationship satisfaction suggest that positive and negative communication impact heterosexual and same-sex partners' relationship satisfaction, as well as can predict overall relationship satisfaction across Western and non-Western couples (Mackey et. al., 2004; Osgarby & Halford, 2013; Rehman and Holtzworth-Munroe, 2007). Results of these studies clearly emphasize the immediate impacts, as well as the prolonged effects, that couple communication can have on intimate partners' relationship satisfaction. Thus, partners' uses of positive and negative communication can be one of the strongest predictors for relationship satisfaction (Brashier & Hughes, 2012; Troy, 2000).

***Positive communication.*** A large body of research supports the benefits of positive communication for partners' relationship satisfaction (Brashier & Hughes, 2012; Guerrero et al., 2009; Idemudia & Ndlovu, 2013; Osgarby and Halford, 2013; Rehman & Holtzworth-Munroe, 2007). Heterosexual and same-sex partners who use positive communication have better problem solving skills (Osgarby & Halford, 2013), lower levels of relational conflict and distress (Mackey et. al., 2004; Osgarby & Halford, 2013), and greater relationship satisfaction (Osgarby & Halford, 2013). Research suggests that there are three types of positive interpersonal interactions that significantly contribute to relationship satisfaction: (a) general interpersonal communication, (b) emotion and affect communication, and (c) sexual communication (Brashier & Hughes, 2012; Guerrero et al., 2009; Mackey et. al., 2004; Troy, 2000).

Troy (2000) studied whether interpersonal communication, sexual communication, and affectionate communication predicted couples' relationship

satisfaction. Overall, intimate partners who predominantly used positive interpersonal communication and effective emotional and sexual communication had greater relationship satisfaction (Troy, 2000). To further expand upon Troy's study, other researchers have studied couple communication and the impacts positive communication has on relationship satisfaction (Brashier & Hughes, 2012; Guerrero et al., 2009; Laurenceau et. al., 2005; Mackey et al., 2004). The results of these studies suggest that partners' who effectively communicate to one another about their positive and negative emotions and the intimate aspects of their relationship are more satisfied and experience less distress in their relationship (Brashier & Hughes, 2012; Guerrero et al., 2009; Laurenceau et. al., 2005; Mackey et al., 2004).

In sum, partners who use effective, constructive, and overall positive communication result in higher quality relationships. In particular, partners who integrate positive communication report feeling more intimately connected (Laurenceau et. al., 2005; Osgarby & Halford, 2013; Yoo et al., 2013) and sexually satisfied (Byers, 2005; Montesi et al., 2011; Theiss, 2011), both enhancing their overall relationship satisfaction. Therefore, partners who effectively engage in interpersonal communication with their partners are more happy and satisfied with their intimate relationships and are more stable over time (Brashier & Hughes, 2012; Guerrero et. al., 2009; Mackey et al., 2004; Osgarby & Halford, 2013; Troy, 2000).

***Negative communication.*** Previous researchers have found that negative communication patterns can result in poor intimate relationship satisfaction (Brashier & Hughes, 2012; Guerrero et al., 2009; Idemudia & Ndlovu, 2013; Osgarby and Halford,

2013; Rehman & Holtzworth-Munroe, 2007), with three main types of negative interpersonal interactions that significantly contribute to relationship satisfaction: (a) general interpersonal communication, (b) emotional and affective communication, and (c) sexual communication (Brashier & Hughes, 2012; Guerrero et al., 2009; Mackey et al., 2004; Troy, 2000). Therefore, research themes suggest that more negative, inconsistent, and destructive approaches to interpersonal communication (Osgarby & Halford, 2013; Rehman & Holtzworth-Monroe, 2007), specifically related to emotions and intimacy (Guerrero et al., 2009; Idemudia & Ndlovu, 2013), can create greater relational conflict and distress (Osgarby & Halford, 2013) and reduced relationship satisfaction (Guerrero et al., 2009; Idemudia & Ndlovu, 2013; Osgarby & Halford, 2013; Rehman & Holtzworth-Monroe, 2007).

Overall, couples' negative communication patterns reduce their relationship satisfaction (Brashier & Hughes, 2012; Guerrero et al., 2009; Idemudia & Ndlovu, 2013; Osgarby and Halford, 2013; Rehman & Holtzworth-Munroe, 2007), intimacy (Laurenceau et. al., 2005; Osgarby & Halford, 2013; Yoo et al., 2013), and sexual satisfaction (Byers, 2005; Theiss, 2011). Often, partners who are prone to using negative communication patterns experience lower levels of intimate connection (Laurenceau et. al., 2005; Osgarby & Halford, 2013; Yoo et al., 2013) and sexual satisfaction (Byers, 2005; Theiss, 2011), as well as lower relationship satisfaction (Brashier & Hughes, 2012; Guerrero et al., 2009; Idemudia & Ndlovu, 2013; Osgarby and Halford, 2013; Rehman & Holtzworth-Munroe, 2007). As a result, couples are more likely to experience relational distress and relationship termination.

In sum, partners' positive and negative communication can enhance or reduce their relationship satisfaction (Brashier & Hughes, 2012; Guerrero et al., 2009; Idemudia & Ndlovu, 2013; Osgarby and Halford, 2013; Rehman & Holtzworth-Munroe, 2007). The impact couple communication has on relationship satisfaction is important for researchers to understand because partners' relationship satisfaction can carry over into their uses of technology. Specifically, understanding partners' relationship satisfaction is important for two reasons: (a) partners' relationship satisfaction can impact their uses of technology in their intimate interactions, and (b) relationship satisfaction is impacted by partners' uses of technology.

### **Relationship Satisfaction and Technology Use**

A small but growing body of research examines the connections between relationship satisfaction and partners' perspectives toward technology. Specifically, relationship satisfaction and technology share a bi-directional relationship. This means that relationship satisfaction can influence partners' views and uses of technology (Coyne et al., 2011; Henline, 2006; Jin & Peña, 2010), and partners' technology uses can influence their relationship satisfaction (Coyne et al., 2012; Miller–Ott et al., 2012). Three themes from research on relationship satisfaction and couples' technology use are evident: (a) relationship satisfaction and technology use behaviors are related, (b) relationship satisfaction (i.e., pre-existing relationship dynamic) impacts the integration and use of technology in couples' daily routines (Coyne et al., 2011), and (c) the integration of technology into couples' daily routines and impacts relationship satisfaction (Coyne et al., 2012; Miller–Ott et al., 2012).

**Relationship satisfaction's effect on technology use.** Relationship satisfaction can influence how couples integrate technology into their relationships (Coyne et al., 2011). Coyne et al. (2011) conducted a study on the types of technology partners use to communicate with one another, the frequency of use, and the relationship between technology use and couples' positive and negative communication. Among other associations found in this study, Coyne et al. (2011) revealed partners' use technology as another method for communicating their satisfaction or dissatisfaction with their partners (Coyne et al., 2011). Partners who were more satisfied in their intimate relationships were more motivated to use technologies to communicate affectionate messages to their partner. In particular, couples used cell phone conversations and text messaging most often to communicate affectionate messages. Other technologies--such as email, instant messages, and social networks--were used to communicate affectionate messages, but less frequently (Coyne et al., 2011).

Conversely, Coyne et al. (2011) also found that partners who were dissatisfied with one another were more motivated to use technologies to communicate their discontentment with their partner. Partners who were dissatisfied in their intimate relationships used technologies to communicate hurtful messages (Coyne et al., 2011), discuss confrontational topics (Coyne et al., 2011), as well as use technology to avoid their partners (Coyne et al., 2012; Henline, 2006; Jin & Peña, 2010). In sum, support for the influence of pre-existing relationship dynamics (i.e., relationship satisfaction) on partners' uses of technology within their intimate relationship is established. Thus, technology use can be an outlet for pre-existing relationship dynamics to emerge.

**The effect of technology on relationship satisfaction.** Additionally, the integration of technology into couples' relationships can impact their relationship satisfaction (Campbell & Murray, in press; Coyne et al., 2012; Miller – Ott et al., 2012; Papp et al., 2012). In fact, the incorporation of technologies into couples' daily routines can positively or negatively impact couples' relationship dynamics (Hertlein & Blumer, 2014; Hertlein & Ancheta; Murray & Campbell, in press). Although it is understood that technology use impacts relationship satisfaction, the majority of research on this topic provides only indirect support for this relationship. This means that only limited research directly correlates the impact of technology use on relationship satisfaction. As a result, readers must interpret the results and determine if technology had a positive or negative impact on couples' overall relationship satisfaction. This is a limitation to current research on the impact of technology use on relationship satisfaction and provides further rationale for studying the relationship between these variables.

Papp et al. (2012) studied the direct relationship between partners' Facebook use and relationship satisfaction. Specifically, the similarity and differences between partners' level of importance for publicizing the intimate details of their relationship on Facebook and the impacts this had on their relationship satisfaction was studied. Papp et al. (2012) found that social media was a point of contention for couples. Often, partners' opinions often differed on their public portrayal of relationship status (i.e., no relationship status shown, single, in a relationship, etc.) and profile pictures (i.e., profile picture that included or did not include partner). Overall, couples' relationship well-being was

negatively impacted by their difference in willingness to publicize the details of their intimate relationship in social media (Papp et al., 2012).

More recently, Campbell and Murray (in press) initiated a study that focused on developing an instrument for measuring intimacy-enhancing and intimacy-reducing uses of technology. The instrument created was named the Technology and Intimate Relationship Assessment (TIRA), and it will be described in more detail later in this chapter. In addition to creating this instrument, Campbell and Murray assessed for between peoples' scores on the TIRA and relationship satisfaction. Campbell and Murray found that relationship satisfaction was not statistically significantly related to technology behaviors used for enhancing intimacy in couple relationships. In contrast, lower relationship satisfaction was associated with technology behaviors that reduced intimacy in their romantic relationship (Campbell & Murray, in press). Although the second correlation was found, the correlation was weak.

The limitations to Campbell and Murray's study resulted from two sources: (a) the population sampled and (b) the relationship satisfaction question. First, the majority of individuals reported being satisfied or very satisfied in their intimate relationships (i.e., limited diversity among responses). Second, Campbell and Murray used only one question to assess for relationship satisfaction, instead of implementing a relationship satisfaction survey. These limitations create concern for the reliability of these correlations. Therefore, there is a need to re-evaluate the relationship between relationship satisfaction and intimacy-enhancing and intimacy-reducing uses of technology to address the indicated limitations.



In contrast to directly assessing for the impact of technology on relationship satisfaction, this relationship has been studied indirectly in several other studies. For example, Coyne et al. (2012) studied the impacts of online video gaming on partners' conflict and aggression toward one another. The results of this study indicated that relational conflict was an outcome of men's--but not women's-- time invested in using media (i.e., online video gaming). Specifically, women became more jealous of their partners' time allocated toward gaming media, because media consumption took away from their meaningful interactions, such as connecting through communication, affection, and joint activities. In addition to relational conflict, partners' conflict over gaming media consumption was related to their engagement in relational aggression (Coyne et al., 2012). Therefore, the integration of online video gaming into couples' relationships has been found to negatively impact the relationship, even though the variable relationship satisfaction was not specifically addressed in this study.

Similarly, both positive and negative impacts of technology (Hertlein & Ancheta, 2014; Murray & Campbell, in press) have been studied; however, they are not directly linked to relationship satisfaction. For example, the integration of social media (Hand et al., 2013), cell phone use (Coyne et al., 2011; Duran et al., 2011; Jin & Pena, 2010; Miller-Ott et al., 2012; Pettigrew, 2009), email (Johnson, Haigh, Becker, Craig, & Wigley, 2008), video chat systems (Neustaedter & Greenberg, 2012), pornography (Bergner and Bridges, 2002), and other technology use behaviors positively and negatively impact couples' relationships, but are not specifically linked to relationship

satisfaction. In sum, minimal research supports a direct relationship for the impact of technology uses on couples' relationship satisfaction.

This study attempted to further advance research on relationship satisfaction and technology use behaviors. To address the identified gap in the literature, the researcher directly assessed for (a) the correlation between relationship satisfaction and intimacy-enhancing and intimacy-reducing technology uses and (b) the proportion of variance of relationship satisfaction that is explained by intimacy-enhancing and intimacy-reducing uses of technology. The RAS (Hendrick, 1988) was used to assess for relationship satisfaction. The TIRA was used to assess for intimacy-enhancing and intimacy-reducing technology uses in couples' relationships.

### **The Impact of Technology on Intimate Relationships**

In this section, a detailed description of the Couples and Family Technology framework (CFT; Hertlein & Blumer 2014) was provided. In particular, the ecological influences, and structural and process changes that occur in couples and family relationships as a result of technology were explored. Next, the integration of family ecology, structural-functional, and interactional constructionist theories that informed the CFT framework were described, followed by the strengths and limitations to this framework. Then, the positive and negative impacts of technology on couples' relationships were described. Afterward, the Technology and Intimate Relationship Assessment (TIRA; Campbell & Murray, in press), an instrument created to measure the intimacy-enhancing and intimacy-reducing impact of technology on couples'

relationships, was discussed. Finally, the strengths and limitations to TIRA were explored, as well as how the current study addressed these limitations was discussed.

### Couple and Family Technology Framework

Originating from Hertlein's (2012) Multitheoretical Model for Understanding Technology Use in Couple and Family Life, the Couple and Family Technology (CFT) framework is used to understand the impacts of technology on intimate relationships (Hertlein & Blumer, 2014). Recently, Hertlein and Blumer (2014) updated Hertlein's original Multitheoretical Model. The main elements of the Multitheoretical Model remain within the new framework; however, slight changes are evident (refer to Figure 3).

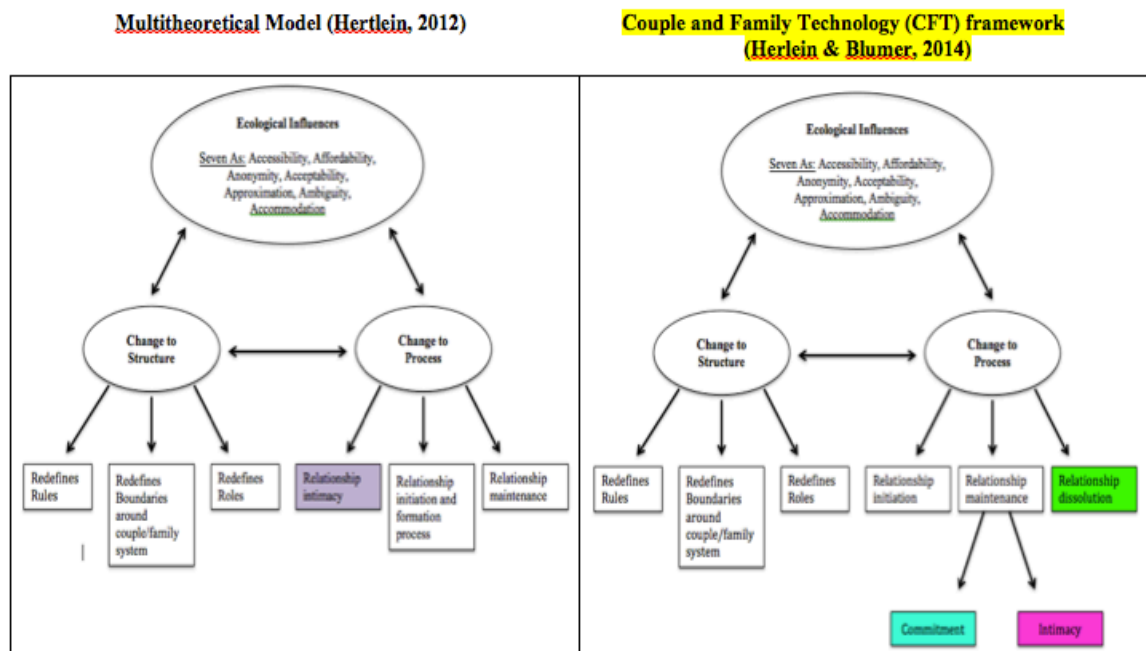


Figure 3. Left – Multitheoretical Model for Understanding the Technology in Couple and Family Life. Reprinted from “Digital dwelling: Technology in couple and family relationships,” by K.M. Hertlein, 2012, *Family Relations*, 61, 374-387. Copyright (2012)

by the National Council on Family Relations. Reprinted with permission. Right - The Couples and Family Technology Framework (CFT). Copyright (2014) from *The Couple and Family Technology Framework: Intimate Relationships in a Digital Age* (78), by K. M. Hertlein and M. L. C. Blumer, 2014, New York, NY: Routledge. Reproduced by permission of Taylor and Francis Group, LLC, a division of Informa plc.

As described by the CFT framework, the integration of advanced technologies into daily routines has altered how people interact with one another (Hertlein & Blumer, 2014). For example, couples' relationship structures, such as their rules, boundaries, and roles for intimate interactions have changed as a result of incorporating technologies into their interpersonal interactions. Additionally, couples' relationship processes, such as verbal and non-verbal communication, rituals, and other behaviors, have changed as a result of integrating technologies into their interpersonal interactions. Therefore, the change in partners' interpersonal interactions also can impact their intimacy with and commitment to their partner (Hertlein & Blumer, 2014).

The CFT framework is a systemic model that accounts for societal, structural, and relational impacts of technology (Hertlein & Blumer, 2014). The framework developed from an integration of three theoretical perspectives: *family ecology*, *structural-functional*, and *interaction constructionist* theories. In combination, the three perspectives provide context for the impact of technology on the *structure* and *process* of intimate relationships (Hertlein, 2012).

**Family ecology.** The larger societal system impacts peoples' daily interpersonal interactions, evident by Bronfenbrenner's Ecological Model (1979; Leonard, 2011). Specific to the CFT framework, advanced technologies are environmental factors that

influence the ways in which partners interact. Hertlein (2012) identified seven ecological elements, the “Seven A’s” - Accessibility, Affordability, Anonymity, Acceptability, Approximation, Ambiguity, and Accommodation (refer to Table 3), as primary influences on peoples’ views and uses of technology (Hertlein, 2012; Hertlein & Blumer, 2014; Hertlein & Stevenson, 2010).

Table 3

“Seven A’s” that Impact Couples’ Structure and Process (Hertlein & Blumer, 2014)

<b>Ecological Element</b>	<b>Description</b>
Accessibility	<ul style="list-style-type: none"> <li>• Technology is commonly found and used in homes, schools, libraries, work places, coffee shops, etc.</li> <li>• Technologies provide more opportunities to communication connect with other people.</li> </ul>
Affordability	<ul style="list-style-type: none"> <li>• Less expensive to purchase.</li> <li>• Minimal financial cost to use technology services.</li> </ul>
Anonymity	<ul style="list-style-type: none"> <li>• The ability to control self-presentation by managing what self-identification characteristics to share with others in technology-facilitated interactions.</li> </ul>
Acceptability	<ul style="list-style-type: none"> <li>• Society is more approving and accepting of technology-facilitated interactions and behaviors.</li> </ul>
Approximation	<ul style="list-style-type: none"> <li>• Quality of technology services are more real, lifelike, and more appealing to people.</li> </ul>
Ambiguity	<ul style="list-style-type: none"> <li>• Uses of technology are not clearly defined as appropriate or inappropriate.</li> </ul>
Accommodation	<ul style="list-style-type: none"> <li>• Technology is used to fulfill ones’ desires that are perceived to be unobtainable in real life.</li> </ul>

Consequently, the “Seven A’s” alter the structure and process of intimate relationships, and change how partners interact (Hertlein, 2012; Hertlein & Blumer, 2014). As a result,

the technological influences can benefit or create additional obstacles for intimate partners (Hertlein, 2012; Hertlein & Blumer, 2014).

**Structural-functional.** In addition to the family ecology perspective, the structural-functional perspective was integrated into the framework as well (Hertlein, 2012). Relationship structures are the invisible organizational systems that manage how each couple and family function (Archer & McCarthy, 2007). Specifically, relationship structures can be understood as the identified roles, rules, and boundaries within each relationship system (Archer & McCarthy, 2007; Colapinto, 1991; Hertlein, 2012; Hertlein & Blumer, 2014). Relationship structures, however, are not fixed entities; in fact, these structures are always undergoing a process of change (Colapinto, 1991). More specifically, relationship structures are constantly under the influence of other (uncontrollable) environmental forces, such as technology, that cultivate structural change (Archer & McCarthy, 2007; Colapinto, 1991). Therefore, structures that adapt to change in their surrounding environment by identifying new and clear structures can benefit from environmental influences (Archer & McCarthy, 2007; Colapinto, 1991; Hertlein, 2012; Hertlein & Blumer, 2014). Conversely, relationship structures that struggle to adapt to environmental influences can result in relationship uncertainty, inappropriate behaviors, and relational conflict (Archer & McCarthy, 2007; Colapinto, 1991; Hertlein, 2012; Hertlein & Blumer, 2014). Therefore, peoples' behavior is a function of their current environment and relationship structures (Hertlein, 2012; Hertlein & Blumer, 2014).

According to the CFT framework, couple relationship structures have changed as a result of integrating modern-day technology into daily routines (Hertlein & Blumer, 2014). Intimate partners' use technology as a function of their environmental and relationship. Therefore, partners' new roles, rules, and boundaries must be negotiated to develop a functional structure and to prevent relational conflict (Hertlein & Blumer, 2014).

**Roles.** Roles can be understood as how we assume people to act in a particular situation (Hertlein & Blumer, 2014). Partners' roles can become blurry as an outcome of their uses of technology. For example, technology provides more opportunities for people to work from their home. If one partner works from home, that person's role during business hours must be defined differently than during non-business hours to prevent relational miscommunication and conflict. Similarly, partners commonly have roles that are associated with specific responsibilities within their home. Time invested in technology may detract from partners' completing their daily responsibilities. Couples who identify the responsibilities that are associated with the new roles within the home are less likely to experience miscommunication and conflict (Hertlein & Blumer, 2014).

**Rules.** Rules can be understood as criteria associated with what is and is not allowed in couples' relationships. Similar to the change in roles, couples must redefine their relationship rules to maintain relationship balance (Hertlein & Blumer, 2014). For example, the accessibility and acceptability for online relationships has propelled couples to develop new relationship rules that define appropriate and inappropriate technology-facilitated relationships. Similarly, some couples have different expectations for phone

use (Duran et al., 2011). Therefore, partners can develop rules for cell phone use; for example, partners can define agreed-upon lengths of time for responding to a text messages and voice calls, as well as develop rules for the content discussed through technology-facilitated communication. Couples who develop rules for their technology use can maintain greater relationship balance (Duran et al., 2011).

***Boundaries.*** Establishing clear boundaries is important for well-defined relationship structures and positive relationship functioning (Hertlein & Blumer, 2014). Boundaries can be described as parameters for acceptable and appropriate behavior, and are specific to each relationship. For example, couples might establish boundaries for sharing details about their intimate relationship on social media. Similarly, partners might define boundaries for length of time allocated toward work or leisure technology use within the home. Partners who establish boundaries for technology use are less likely to experience miscommunication and conflict (Hertlein & Blumer, 2014).

***Interaction-constructivist.*** The third and final theory integrated into the CFT framework is the interactions-constructivist perspective. According to interaction-constructivist perspective, peoples' relationships develop from their interpersonal interactions (i.e., they are co-constructed). Therefore, a relationship is the outcome of two or more people interacting together (Becvar & Becvar, 2009; Hertlein, 2012; Hertlein & Ancheta; Hertlein & Blumer, 2014).

Technology has become a forum that people can use to construct or de-construct relationships (Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014; Murray & Campbell, in press). People can use technology to initiate, maintain, or terminate intimate



relationships. Therefore, partners' uses of technology can enhance or reduce their relationship intimacy and redefine relationship commitment (Hertlein & Blumer, 2014).

In summary, the CFT framework is a systemic framework used for understanding the impacts of technology on intimate relationships (Hertlein & Blumer, 2014). Each theoretical perspective: *family ecology*, *structural-functional*, and *interaction constructionist* uniquely contribute to understanding a part of the total impact that technology has on relationship systems and relational intimacy. Specifically, the family ecology perspective describes the impact of environmental influences on technology use. Additionally, the structural-functional perspective uniquely describes the impact technology has on couples' relational structures by addressing the changes that occur to couples' interpersonal rules, boundaries, and roles, as well as the importance of establishing new and clear structures and functions for relational balance. Lastly, the interaction-constructionist perspective describes the impact technology has on couples' communication, behavior, and interaction processes. The integration of the three theoretical perspectives provides a thorough understanding of the impact technology (i.e., the larger societal system) has on the *structure* and *process* of intimate relationships. Although not specifically indicated, the positive and negative impacts technology can have on intimate relationships, particularly couples' relational intimacy, is evident (Campbell & Murray, in press; Hertlein, 2012; Hertlein & Blumer, 2014).

**Limitations to the CFT framework.** The CFT framework is an theoretically supported framework that clearly illustrates the ecological, structural, and constructivist impacts of technology on couples' intimate relationships (Hertlein, 2012; Hertlein &

Blumer, 2014). However, there also are limitations to this framework. The research related to the development of Hertlein's Multitheoretical Model (2012) and Hertlein and Blumer's CFT framework (2014) was based on other qualitative and quantitative empirically supported studies that found technology use to change intimate relationship structures (i.e., relationship roles, rules, and boundaries) and process of intimate relationship interactions (i.e., relationship initiation, maintenance, and dissolution) (Albright, 2008; Baillie & Benyon, 2008; Grov, Gillepsie, Royce, & Lever, 2011; Henderson & Gilding, 2008; Humphrey, 2005; Manning, 2006; McKenna, Green, & Gleason 2002; Whitty, 2008; Yum & Hara, 2005). As a result, theoretical support for potential positive and negative impacts on relational intimacy from using technology was established.

Most of Hertlein's research approaching the development of the Multitheoretical Model was associated primarily with qualitative, non-empirical research, and therapeutic application and included (a) critical reviews of Internet infidelity research (Hertlein & Piercy, 2006); (b) syntheses of literature on relationship problems that result from technology (Hertlein & Webster, 2008)-- specifically, the negative impact of technology on couples' intimacy (Hertlein & Stevenson, 2010) and sexual satisfaction (Hertlein, 2010); and (c) interpretations of literature for therapeutic implications of treating relationship problems that result from technology (Hertlein, 2010; Hertlein, 2011; Hertlein & Hawkins, 2012; Hertlein & Stevenson, 2010; Jones & Hertlein, 2012).

The critical reviews and research syntheses on couples and technology developed a foundation for the CFT framework for conceptualizing the impact of technology on

couples' relationships (Hertlein & Blumer, 2014). Additionally, this research also provided a better understanding of the advantages and disadvantages uses of technology on intimate relationships (Campbell & Murray, in press; Hertlein & Ancheta, 2014), and addressed the broad therapeutic implications for treating couples with relationship issues, as a result of technology (Hertlein, 2010; Hertlein, 2011; Hertlein, & Hawkins, 2012; Hertlein, & Piercy, 2008; Jones, & Hertlein, 2012). To the researcher's knowledge, however, there is limited empirical research for the CFT framework. More specifically, there is minimal empirical research that tests for the individual and relational background characteristics of technology users that contribute to partners' use of technology and the overall impact technology has on relational intimacy and relationship satisfaction (Coyne et al., 2011; Hertlein & Ancheta, 2014; Murray & Campbell, in press).

Consequently, the CFT framework is a broad framework used to explain the environmental influences on and changes to intimate relationship systems as a result of technology. Individual and relational factors that contribute to the impact of technology on couples' intimacy have only been discussed in literature syntheses (Hertlein, 2010; Hertlein & Blumer, 2014). To the researcher's knowledge, these factors are not specifically included or addressed in the framework, nor quantifiably tested in relation to this model. Further, the approach to conceptualizing the positive and negative impacts of technology on couples' relationships are only empirically understood at a broad level, not an individual and relational level. Although these theoretical perspectives integrate to provide a systemic framework for understanding the technological impacts on several levels, more specific factors about people and their relationships need to be further

delineated. Recently, researchers have begun to work toward this delineation by examining how technologies can impact couple relationships, both positively and negatively.

### **Positive and Negative Influences of Technology on Intimate Relationships**

Recently, research on uses of technology and couples relational intimacy has flourished (Blumer, Hertlein, Smith, & Allen 2014; Campbell & Murray, in press; Coyne et al., 2011; Coyne et al., 2012; Hand et al., 2013; Helsper and Whitty 2010; Hertlein, 2010; Hertlein, 2012; Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014; Hertlein & Hawkins, 2012; Hertlein & Stevenson, 2010; Hertlein & Webster, 2008; Johnson et al., 2008; Murray & Campbell, in press; Lanigan, 2009; Manning, 2006; Neustaedter & Greenberg, 2012; Papp et al., 2012; Perry & Werner-Wilson, 2011; Pettigrew, 2009; Schnurr et al., 2013; Sprecher, 2009). In response to the rapid development of literature on technology use and intimate partner relationships, both Hertlein and Ancheta (2014) and Murray and Campbell (in press) completed studies that explicitly assessed for and described the advantageous and disadvantageous outcomes of technology use on couples' relationships. As reflected in current literature trends, both positive and negative impacts of technology on couples' intimacy are evident (Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014; Murray & Campbell, in press).

Hertlein and Ancheta (2014) conducted a study that was guided by a grounded theory framework. In this study, a recursive open-coding analysis was implemented with pre-existing data on undergraduates sending and receiving texts and sexts (i.e., sexually explicit text messages or pictures). Participants' responses to four questions (i.e., "How

are people using web-based technology and media to support intimate relationships?”, “What are the technology-based healing strategies you think people use in intimate relationships?”, “What are the ways technology supports intimate relationships?”, and “What are the ways technology interferes with relationships?”) were analyzed and coded by researchers. Coders used thematic and open-ended coding to identify, compare, and integrate advantageous and disadvantageous themes for the impacts of technology use on couples’ relationships. As a result, three primary themes for advantageous uses of technology (i.e., relationship development, relationship management, and relationship enhancement) and three primary themes for disadvantageous uses of technology (i.e., relationship distancing, relationship impaired trust, and lack of clarity) emerged (Hertlein & Ancheta, 2014).

Similarly, Murray and Campbell (in press) conducted a study on the impacts of technology on relational intimacy. A content analysis of participants’ responses to two questions (i.e., “What are the perceived benefits of technology within the context of people’s intimate relationships?” and “What are the perceived negative impacts of technology within the context of people’s intimate relationships?”) was used to identify positive and negative themes for the impacts of technology use on couples’ relationships. The content analysis revealed nine categories of technology use that people perceive to benefit their relationship: (a) communication, (b) facilitates long distance relationships, (c) life management and planning, (d) intimacy and affection, (e) leisure and relaxation, (f) meeting on-line, (g) learning about one’s partner, (h) connection to social support, and (i) preserving relationship memories. Additionally, the content analysis revealed five

categories of technology that people perceive to negatively influence their relationship:

(a) impairs communication and intimacy, (b) specific relationship problems, (c) distractions from and infringes on the relationship, (d) usage patterns, and (e) features of technology.

**Positive influences.** Through the integration of Hertlein and Ancheta's (2014) and Murray and Campbell's (in press) research, the positive impacts technology can have on couples' relationships are evident. Below is a description and integration of Hertlein and Ancheta's (2014) and Murray and Campbell's (in press) research findings on the potential positive influences of technology use on intimate relationships. The integration of literature resulted in seven categories of technology use that positively influence intimate relationships.

**General communication.** Technology used as a forum for interpersonal interactions can positively impact intimate relationships. Murray and Campbell (in press) identified four ways in which technology is beneficial to relationships. First, technology provides multiple communication channels for people to interact with one another. Second, the multiple channels of communication help people to keep in contact, share updates, news, information, and initiate new relationships. For example, people can use text messaging, voice calls, e-mail, or video chat to stay in contact with one another, to initiate a new relationship, or maintain an existing relationship. Additionally, these same channels can be used to update or share important information with one's partner instantly (Murray & Campbell, in press).

***Relationship development.*** An advantageous use of new technology is for developing relationships and support (Hertlein & Ancheta; Murray & Campbell, in press). Two features of technology contribute to relationship development: the opportunities it affords for meeting people and its potential for helping people to develop emotional and social support (Hertlein & Ancheta; Murray & Campbell, in press). Murray and Campbell (in press) noted that technology is particularly useful for meeting people online. Overall, technology is a platform for meeting new people, as well as initiating and developing intimate relationships. As a result of technology developments, online forums, such as chat rooms and dating sites, are available for people to meet and develop new relationships. In addition to meeting new people, technology has become a communication platform for people to develop social and emotional support. For example, people can use technology to communicate affectionate and supportive messages that enhance feelings of closeness and connection (Hertlein & Ancheta, 2014).

***Relationship management.*** Couples who use technology to better manage their relationships also reap benefits (Hertlein & Ancheta, 2014). Hertlein and Ancheta (2014) identified four features of technology that help couples manage their relationships. Technology forums provide couples with opportunities to a) seek information, b) manage conflict, c) reduce anxiety, and d) demonstrate relationship commitment. Technology is used frequently to seek relationship information that can benefit the relationship, such as articles on relationship building, sexual games, and date-night ideas. Conflict management is another way couples can use technology to benefit their relationships. For instance, technology-facilitated conversations can deescalate conflict by mediating

problem solving and apologies. Additionally, technology-mediated communication can help reduce couples' anxiety for discussing uncomfortable topics, such as sexual satisfaction. A final way that couples' can use technology to manage their relationship is to display their commitment to their relationship; they can display their relationship status or other details in social media to make their relationship publically known to friends and family (Hertlein & Ancheta, 2014).

***Life management and planning.*** Similar to relationship management, an advantageous aspect of technology use is for life management and planning (Murray & Campbell, in press). Couples can use technology to enhance their daily functioning. For example, technology forums provide easy access to discuss daily scheduling, and organization of household responsibilities and tasks. In addition to enhancing couples' daily functioning, technology platforms can provide them with easier access and more opportunities to accomplish tasks and other responsibilities quicker, so that partners have more leisure time together. Lastly, couples can use technology for making plans with their partners for date nights or weekend getaways (Murray & Campbell, in press).

***Learning about partner.*** Technology provides people with access to forums, such as social media, in which they can learn more about their partners (Murray & Campbell, in press). At the beginning stages of relationship formation, couples can use technology to learn logistical information, as well as personality, relational, and social characteristics of their partners through social media networks and other platforms for personal self-disclosure via technology (Murray & Campbell, in press).



***Relationship enhancement.*** Another advantageous feature of technology in couples' relationships is enhancing relationship intimacy (Hertlein & Ancheta, 2014). Hertlein and Ancheta (2014) noted that couples may use technology to enhance their sex lives and facilitate long-distance relationships. Similarly, Murray and Campbell (in press) identified three uses of technology that can enhance a couple's relationship: (a) expressing intimacy and affection, (b) facilitating long distance relationships, and (c) promoting leisure and relaxation.

***Sex, intimacy, and affection.*** Couples can use technology to enhance their sexual satisfaction. For instance, partners can use technology to view sexually stimulating media together and engage in sexual acts, such as texting sexually and/or emotionally intimate pictures, videos, and messages (Hertlein & Ancheta, 2014). In fact, couples can use all forms of technology to foster relationship affection and intimacy (Murray & Campbell, in press). For example, couples can use text messaging or e-mail to send affectionate, sexual, or flirtatious messages to their partner.

***Facilitate long-distant relationships.*** Another way that technology can serve as a platform for relationship enhancement is providing partners with easy access to maintain long-distance relationships (Hertlein & Ancheta, 2014). Technology provides multiple channels (e.g., video chat systems, text messaging, e-mail, and voice calls) that intimate partners can use to connect, maintain, and enhance their long-distance relationship (Hertlein & Blumer, 2014; Murray & Campbell, in press). Technology used to facilitate long-distance relationships can benefit couples who live in separate geographical areas

long-term, as well as couples who temporarily lived in separate geographical areas (e.g., one or both partners traveled for work; Murray & Campbell, in press).

*Leisure and relaxation.* Lastly, technology can positively impact couples' relationships when they use features of technology that promote shared leisure and relaxation time (Murray & Campbell, in press). For example, couples can use their leisure time to relax, laugh, and further connect over watching TV and movies, as well as playing online games together (Murray & Campbell, in press).

*Preserving relationship memories.* Certain aspects of technology allow people to preserve relationship memories (Murray & Campbell, 2014). For example, couples can save meaningful text messages, e-mails, and pictures and refer back to these documented memories in the future. Couples who use technology to preserve relationship memories find this to benefit their relationship (Murray & Campbell, in press).

**Negative influences.** While there are positive impacts of technology use, it can also negatively affect couples' relationships (Hertlein & Ancheta, 2014; Murray & Campbell, in press). Below is a description and integration of Hertlein and Ancheta (2014) and Murray and Campbell (in press) research results on the negative impact technology use can have on intimate relationships. The integration of negative influences resulted in four categories of technology use that are disadvantageous to intimate relationships.

*Relationship distancing.* For some couples, technology use is disadvantageous when it creates more distance between partners (Hertlein & Ancheta, 2014). Hertlein and Ancheta (2014) found that partners' technology use could contribute to relationship

distancing by: (a) distracting users attention from their partner, (b) depersonalizing partners' communication, and (c) impairing partners' intimacy process (Hertlein & Ancheta, 2014). Similar to Hertlein and Ancheta, Murray and Campbell (2014) found that partners' use of technology could create distance between couples by: (a) distracting couples, and (b) impairing their communication, and (c) impairing intimacy.

*Distracts from relationship.* Technology use can impair couples' ability to focus on one another. Specifically, technology can distract partners from being physical and emotionally present with one another (Hertlein & Ancheta, 2014; Murray & Campbell, in press). The ease of access of technology can significantly contribute to relationship distractions. For example, ease of access for checking work e-mail and social media, can interfere with couples' focus on their relationship. Individual technology use, that does not include their partner, can detract time and attention away from their relationship, if their partners do not share the same interests (e.g., online gaming). Also, technology can be used to intentionally escape from uncomfortable or distressing relationship issues and to avoid disliked responsibilities.

*Impairs communication.* Partners' technology-mediated communication can hinder positive communication processes (Murray & Campbell, in press). Technology-facilitated communication can compromise couples' communication and foster inauthentic communication (Murray and Campbell, in press). Hertlein and Ancheta (2014) referred to this impairment to couples' communication as "lack of clarity" and "misinterpreted messages" that result from technology-facilitated communication.

Additionally, Hertlein and Ancehta (2014) identified that technology users motivations can contribute to partners' impaired communication.

Technology can be disadvantageous to relationships when messages are unclear to the receiving partner (Hertlein & Ancheta, 2014; Murray & Campbell, in press).

Sometimes, technology users' messages can be easily misinterpreted and create conflict between partners. For example, couples' non-verbal communication such as emotional context, tone of voice, and facial expressions, as well as delay in response time are not understood through text messages, and left for interpretation by the receiving partner.

Often, compromised communication results from partners misinterpreting the non-verbal aspects of technology-mediated communication (Hertlein & Ancheta, 2014; Murray &

Campbell, in press). Also, the user's motivations can compromise couples' communication. For example, technology provides more opportunities for partners to purposefully ignore, or avoid responding to their partner or pursue their partner for a response, which can negatively impact their relationship (Murray & Campbell, in press).

Lastly, technology-facilitated communication can be perceived as impersonal because it lacks the physicality that face-to-face interactions have; thereby compromising partners' feelings of closeness and connection (Hertlein & Ancheta, 2014; Murray & Campbell, in press). Overall, partners' uses of technology can compromise their communication as a result of users motivations, as well as the depersonalized or inauthentic communication, and misinterpretation of messages.

*Impairs intimacy.* Couples' technology-mediated communication can reduce their intimacy (Murray & Campbell, in press). Technology has become a primary channel for

couples' communication, and can develop into a forum for couples to have difficult conversations. Although technology can help couples facilitate difficult conversations, technology-facilitated controversial conversations can also hinder partners' feelings of closeness and connection during and after. As technology use increases in couples' daily routines, their face-to-face communication and interpersonal interactions may significantly decrease. The decrease in face-to-face interactions can interfere with couples' intimacy, as well. As previously mentioned, technology use can distract partners from being present in their relationship and distract partners from spending quality time together. Therefore, couples' uses of technology can interfere with their intimacy process and, when not used effectively, can actually hinder couples' intimacy (Hertlein & Ancheta, 2014; Murray & Campbell, in press).

***Specific relationship problems.*** Couples' daily use of technology can foster several other relationship problems (Murray & Campbell, in press). In particular, Murray and Campbell (in press) research revealed four themes: (a) privacy infringements, (b) gossip and drama, (c) jealousy and distrust, and (d) on-line pornography and infidelity. Similar to Murray and Campbell (in press), Hertlein and Ancheta (2014) found partners' technology use fostered feelings of distrust in intimate relationships when technology was used to a) keep secrets, b) distract from primary relationship, and c) communicate false impressions, as well as when partners had d) unbalanced time investments.

***Privacy infringements.*** Some people use technology to check-up on their partners (Murray & Campbell, in press). For example, some partners may use technology to check their partner's social media account, e-mail, and phone records for reassurance

about their relationships. Partners who use technology to check-up on their partners communicate distrust and can negatively impact their relationship (Murray & Campbell, 2014).

*Gossip and drama.* Partners' uses of technology can create relationship drama (Murray & Campbell, in press). For example, relationship distress can result from partners who overshare the private aspects of their relationship over social media technology platforms, without the consent of their partners (Murray & Campbell, in press). Oversharing or not sharing enough relationship information can create unnecessary conflict for couples and hinder their relationship intimacy.

*Jealousy and distrust.* Relationship jealousy and distrust can develop as a consequence of partners' technology use. Technology provides platforms for partners to use privacy settings that can be used to keep secrets from their partner. Technology can distract partners from investing time into their primary relationship, as well as provide forums for partners to invest in other activities or people. Partners who have varying levels of appreciation and boundaries for and time investments in technology can foster feelings of jealousy and distrust in their relationship. For example, partners who devote significant amount of leisure time into online gaming can create jealousy in the non-gaming partner. The non-gaming partners can become jealous of the time their partner invests into gaming and the relationships they are developing through online gaming. Lastly, features of technology (e.g., anonymity) allow people who are initiating new intimate relationships to give off false impressions of their personality and physical appearance. This can create false expectations and result in distrust and jealousy.

*Pornography and infidelity.* Technology provides forums for people to engage in pornography and acts of infidelity (Murray & Campbell, in press). Technology platforms have expanded opportunities for connecting and developing intimate relationships with people outside of the primary relationship. Some partners may be tempted to use technology to emotionally and physically invest outside of their primary relationship, which could result in significant relationship problems. Additionally, for some couples, partners' access to, use, or overuse of pornography can result in relationship insecurities, distrust, and conflict (Murray & Campbell, in press).

*Usage patterns.* Specific technology use patterns can negatively impact intimate relationships. Murray and Campbell (in press) identified two subcategories for usage patterns that negatively impact couples' relationships: overuse and pet peeves with partners' use. Specifically, some partners may excessively use technology, such that it interferes with daily functioning, especially detracting from responsibilities and intimate interactions. Sometimes, partners' use of technology may annoy their partner, and can result in confrontation and conflict (Murray & Campbell, in press).

*Features of technology.* Lastly, another disadvantageous aspect of technology on couples' relationships can result from technology features (Murray & Campbell, in press). Specifically, the cost of technology can become a financial burden that contributes to financial and relational distress. In addition to the cost, discrepancies between partners' views on and willingness to incorporate specific technology devices into their daily routines can negatively impact their relationship, also (Murray & Campbell, in press). For example, a partner who has a functioning iPhone, but likes to

purchase the new iPhone immediately after it is released in stores, could create relationship conflict if their partner disagrees. Recently, an instrument was created for assessing the impact of couples' technology use on relational intimacy.

### **The Technology and Intimate Relationship Assessment**

The Technology and Intimate Relationship Assessment (TIRA) was created to assess couples' uses of technology that enhance and reduce their relational intimacy (Campbell & Murray, in press). The development of the TIRA resulted in a 22-item instrument with two subscales, Intimacy-Enhancing subscale and Intimacy-Reducing subscale. The Intimacy-Enhancing subscale assesses for technology use that positively influences couples' intimacy. In contrast, the Intimacy-Reducing subscale evaluates uses of technology that reduce couples' intimacy. Therefore, higher scores on the Intimacy-Enhancing subscale reflect higher levels of perceptions that technology more positively impacts and enhances their relational intimacy. Similarly, higher scores on the Intimacy-Reducing subscale indicate greater perception of technology's negative impact and reduction of their relational intimacy (Campbell & Murray, in press).

Although the interplay between technology and intimate relationships is evident (Coyne et al., 2011; Coyne et al., 2012; Hertlein, 2012; Hertlein & Blumer, 2014; Hertlein & Stevenson, 2010; Hertlein & Webster, 2008; Neustaedter & Greenberg, 2012), these interconnections are limited due to the various instruments researchers have used to assess uses of technology and impacts on intimate relationships. The TIRA was developed to address this limitation and support reliability of future research on technology and couples' relationships (Campbell & Murray, in press). The TIRA can be



used to assess for specific uses of technology that both positively and negatively impact couples' intimacy. The development of this instrument provided further support that couples' uses of technology can have positive and negative impacts on their relational intimacy, and it provided some empirical support for the influence individual and relational factors have on individual uses of technology (Murray & Campbell, in press).

Similar to other instruments, the TIRA has limitations as well. The TIRA is a newly-developed instrument that has limited evidence of its psychometric properties. Campbell and Murray assessed for participants' relationship satisfaction to develop initial psychometrics for the instrument; however, relationship satisfaction was assessed by one question, not a psychometrically supported instrument. Additionally, the TIRA was normed on a minimally diverse population, such that participants were primarily satisfied or highly satisfied in their relationships. Therefore, the relationship between couples' relationship satisfaction and intimacy-enhancing and intimacy-reducing uses of technology is supported, although minimally. In the current study, the researcher will address these limitations by gathering a sample from more diverse settings and use an empirically supported instrument to assess for relationship satisfaction.

The limited number of individual characteristics previously associated with the Intimacy-Enhancing and Intimacy-Reducing subscales, creates a final limitation to the TIRA. Specifically, individual's TR, gender, and their impact on technology use that enhances and reduces relational intimacy were not previously assessed. To address this limitation, in the current study, individuals' TR, age, and gender, as well as relationship

duration and relationship satisfaction will be tested with the Intimacy-Enhancing and Intimacy-Reducing subscales of the TIRA.

### **Conclusion**

Technology has changed the structure and process of intimate relationships (Hertlein & Blumer, 2014). Technology advances impact intimate relationships in two important ways: partners' uses of technology positively or negatively impact their intimate relationships and pre-existing relationship dynamics impact how partners use technology in their intimate relationships (Hertlein & Blumer, 2014). Although previous researchers found that partners' individual and relational characteristics could impact partners' views and uses of technology, the impact of personal and relational background characteristics on partners' views and use of technology and the impact uses have on couples' intimacy have not been explicitly tested (Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014). In response to the identified limitations, the current study examined the influence of individual and relational characteristics of individuals in intimate relationships to better understand their views and uses of technology, as well as the positive and negative impacts use have on their relational intimacy.

In sum, technology development and use have thrived over the past two decades (Cole et al., 2009). Current literature trends indicate that technology influences the structure and processes of intimate relationships (Hertlein, 2012; Hertlein & Blumer, 2014), and technology can positively and negatively impact couples' intimacy (Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014; Murray & Campbell, in press). However, minimal research has quantified the individual and relational characteristics that influence

partners' technology use and relational intimacy. In particular, the interplay of individuals' views and uses of technology and individual and relational background characteristics have on intimacy-enhancing and intimacy-reducing uses of technology is unknown.

The purpose of this study was to identify individual and relational characteristics that impact how partners view and use technology, and examine the impact partners' use has on their relational intimacy. Specifically, this study determined if there were identifiable groups of people based on individual characteristic variables: TR, relational communication, and uses of technology that enhance or reduce couples' intimacy. In addition, personal and relational background characteristics (i.e., age, gender, relationship duration, and relationship satisfaction) were examined to inform clinicians about different types of technology engagement that can positively or negatively impact couples' intimacy.

## CHAPTER III

### METHODOLOGY

In Chapter I, a study aimed at identifying patterns of how individuals view and use technology in relation to intimacy within their romantic relationships was introduced. A review of the literature was presented in Chapter II to provide support for an exploration of individual and relational characteristics that influence whether technology use positively or negatively affects couples' intimacy. This chapter includes a detailed description of the methodology to be used in the current study, including the research questions and hypotheses, a detailed description of participants, procedures, instrumentation, and data analyses.

#### **Research Questions and Hypotheses**

The aim of this study was to identify characteristics that influence how people view and use technology and how this impacts couples' relationship intimacy. One purpose of the study was to determine if there were identifiable groups based on TR, couple communication, and the impact of technology on relational intimacy (i.e., technology-enhancing and technology-reducing impacts). The research questions, hypotheses, measures, and data analyses are listed below in Table 4.

Table 4

Summary of Research Questions, Hypotheses, Measures, and Analyses

Research Questions	Hypotheses	Measures	Analyses
<i>RQ1</i> : Are there distinct profile groups among participants based on their scores on the measures of TR, couple communication, and the impact of technology on relational intimacy (i.e., intimacy-enhancing impacts and intimacy-reducing impacts)?	<p><i>H1</i>: There will be 4 distinct profile groups that emerged from the cluster analysis.</p> <p><b>Group 1</b> - individuals with higher levels of TR, higher positive communication skill, and higher levels of intimacy-enhancing technology use and lower levels of intimacy-reducing technology use.</p> <p><b>Group 2</b> – individuals with lower levels of TR, higher positive communication skills, and moderate levels of intimacy-enhancing technology use and moderate levels of intimacy-reducing technology use.</p> <p><b>Group 3</b> – individuals with higher levels of TR, higher negative communication skills, and moderate levels of intimacy-enhancing technology use and moderate levels of intimacy-reducing technology use.</p> <p><b>Group 4</b> – individuals with lower levels of TR, higher negative communication skills, and lower levels of intimacy-enhancing technology use and higher</p>	<p>TRI (Parasuraman, 2000).</p> <p>PCI (Locke et al., 1957; Navran, 1967).</p> <p>TIRA (Campbell &amp; Murray, in press).</p>	<p>Agglomerative Cluster Analysis</p> <p>Discriminant Analysis</p>

	levels of intimacy-reducing technology use.		
<p><i>RQ2a:</i> If distinct groups emerge in the cluster analysis used to answer RQ1, are there significant differences between groups based on the following demographic variables: age and relationship duration?</p> <p><i>RQ2b:</i> If distinct groups emerge in the cluster analysis used to answer RQ1, are there significant differences between groups based on gender?</p>	<p><i>H2a:</i> Significant differences between groups will not exist based on age and relationship duration at <math>p &lt; .05</math> and <math>p &lt; .01</math>.</p> <p><i>H2b:</i> Significant differences between groups will not exist based on demographic variable gender at <math>p &lt; .05</math> and <math>p &lt; .01</math>.</p>	<p>Demographic Survey</p> <p>Groups identified in RQ 1, if applicable</p>	<p><i>2a:</i> ANOVA</p> <p><i>2b:</i> Chi-Square</p>
<p><i>RQ3:</i> Independent of the results of the cluster analysis, what proportion of the variability in participants' relationship satisfaction is explained by their intimacy-enhancing and intimacy-reducing impacts of technology?</p>	<p><i>H3:</i> After controlling for age, relationship duration, and gender technology use will still predict relationship satisfaction with (a) intimacy-enhancing technology positively related to relationship satisfaction, and (b) intimacy-reducing technology use negatively related to relationship satisfaction.</p>	<p>RAS (Hendrick, 1988).</p> <p>TIRA</p>	<p>Multiple Regression Analysis</p>

*Note:* \*  $p < 0.05$  and  $p < 0.01$  will be used to determine test significance and identify potential differences for future studies. Significance at  $p < 0.01$  reduce Type I Error.

## **Participants**

The aim of this study was to identify the impact of TR and communication skills on couples' relationship intimacy as related to how they use technology. To obtain a sizeable and diverse sample of individuals, the current study had broad inclusion criteria. To be included in the study, individuals had to self-identify as being (a) at least 18 years of age and (b) in a monogamous intimate relationship for a minimum of 1 year (Coyne et al., 2011). For purposes of this study, a monogamous intimate relationship was defined as an exclusive relationship in which two individuals share an emotional, romantic and/or sexual connection, and both individuals agree that neither partner will share a similar relationship with another person (Adams & Johns, 1997; Moss & Schwebel, 1993).

Given the exploratory nature of Research Question I, determining an appropriate sample size is challenging. In fact, there is no specific rule for determining a required sample size for cluster analysis (Mooi & Sarstedt, 2011). However, a fairly large sample size is preferred to increase the likelihood of clear clusters emerging and also to protect against instances of missing data; meaning some participants are dropped from a study based on the number of test items they fail to complete (Mooi & Sarstedt, 2011). A G\*Power analysis program was utilized to determine the required sample size for research question II and research question III. Research question II required a sample size of 128, using an alpha level of .05, medium effect size (.50), and a desired power of .80 for an ANOVA. Research question III required a sample size of 68, using an alpha level of .05, medium effect size (.15), 2 test predictors, and a desired power of .80 for a

multiple regression analysis. Therefore, the target sample size for this study was a minimum of 200 participants.

### **Participant Recruitment**

To obtain a broad community sample of individuals, a convenience snowball sampling procedure was employed. There were four primary recruitment strategies for collecting data: face-to-face, electronic e-mail, flyers, and social media. First, the researcher set up a recruitment station to ask individuals to participate in the current study at three local community businesses and organizations in Greensboro, North Carolina: (1) Proehlfic Park Family Sports Complex and Fitness Center, (2) the Greensboro Public Library – Central Station, and (3) College Park Baptist Church. The researcher administered the survey packet to participants who were willing to participate onsite. Other volunteers received a survey packet to complete off site and return to the researcher through the mail. The researcher provided those individuals with appropriate packaging and postage so that participants could mail packets to the researcher at no cost.

Second, the researcher sent out recruitment e-mails to approved local community business and organization listservs, as well as to personal and professional contacts. The researcher collected data through an electronic survey program called Qualtrics. The web-site address for the survey was provided in the e-mail. Individuals were directed to copy and paste the web address into their web browser to gain access to the survey. In addition to utilizing community listservs, as well as personal and professional contacts, the third method used for recruiting participants involved the researcher distributing flyers to approved local community businesses and organizations that provided



information about the study and “tear-off tabs” with the survey web address. Individuals interested in participating in the study tore off a tab and completed the survey at their own convenience.

The fourth recruitment strategy that the researcher used was recruiting participants through social media resources. The researcher posted information about the current study on her personal Facebook page. Additionally, the researcher targeted public social media sites that are specifically related to groups of people who are interested in relationships and relationship issues (e.g., NCAMFT and Gay Marriage USA Facebook page). The information included the details of the study, participant eligibility criteria, compensation, and the survey link. In summary, there were four primary recruitment strategies; face-to-face, electronic e-mail, flyers, and social media, used for collecting data.

Recruited individuals had to meet the inclusion criteria to participate in the current study. Potential participants were required to answer “yes” to the following two questions before gaining access to the survey: (a) “Are you 18 years or older?” and (b) “Are you currently in a monogamous intimate relationship that has lasted one year or longer?”.

### **Study Procedures**

The researcher obtained Institutional Review Board (IRB) approval prior to data collection. Next, the researcher recruited participants as described in the participant recruitment section above. Eligible participants completed the informed consent, followed by the demographic questionnaire and four assessments. Participants who

completed the questionnaire and assessments had the opportunity to sign up for a gift card drawing for one of twenty \$10 e-gift cards to Target. Only the participants who fully completed the survey were included in the gift card drawing.

Once the researcher obtained the target sample size of 200 participants, the researcher compiled the data into a single database that included participants' responses to the informed consent, demographic questionnaire, and the four assessment instruments: the Technology Readiness Index (TRI; Parasuraman, 2000), the Primary Communication Inventory (PCI; Locke et al., 1957; Navran, 1967), the Technology and Intimate Relationships Assessment (TIRA; Campbell & Murray, under review), and the Relationship Assessment Scale (RAS; Hendrick, 1988). Finally, the researcher implemented the data analyses and record results.

### **Instrumentation**

Participants were presented with an informed consent, demographic questionnaire, and a survey packet that resulted in a total of 100 items. The informed consent document described the purpose of study, inclusion criteria, potential risks, limits of confidentiality, and voluntary participation. Upon agreeing to the informed consent document, participants were presented with instruments that assess their demographic characteristics, TR, relational communication, technology's impact on couples' intimacy, and relationship satisfaction. The instrumentation utilized in the current study consisted of (a) a demographic survey, (b) the TRI (Parasuraman, 2000), (c) the PCI (Locke et al., 1957; Navran, 1967), (d) the TIRA (Campbell & Murray, in press), and (e) the RAS

(Hendrick, 1988). The survey packet was estimated to take 20 to 25 minutes for participants to complete all 100 items.

### **Demographic Questionnaire**

The demographic portion of the survey consisted of 36 items. The demographic variables included on the questionnaire focused on participants' individual and relational characteristics, as well as participants' technology use behaviors. For instance, "What is your gender identity?" and "What is your partner's gender identity" are examples of demographic items focused on individual characteristics of the participant and the participant's partner. Additionally, "What is your relationship status?" and "How many years and months total have you and your partner been together?" are examples of questions targeted to identify information about participants' intimate relationships. Lastly, "In an average week, how much time do you spend using technology during your leisure time for non-work-related purposes?" and "Which forms of technology do you use the most frequently when communicating with your partner?" are examples of participants' technology use behavior items. Demographic questions about age, gender, and relationship duration were used in RQ 2a and RQ 2b to assess for differences between hypothesized groups. See Appendix C for a detailed description of the demographic questionnaire.

### **Technology Readiness Index**

To operationalize each individual's willingness to engage with technology, the researcher used the TRI (Parasuraman, 2000). The original measure consisted of 36 items and 4 subscales in which participants indicate their level of agreement with each

technology statement on a Likert scale of 1 (strongly disagree) to 5 (strongly agree) (Parasuraman, 2000). The four subscales are optimism (10 items), innovativeness (7 items), discomfort (10 items), and insecurity (9 items; Parasuraman, 2000). In addition to the 36-item index, there are 10-item and a 6-item versions of the TRI (Rose & Fogarty, 2010; Victorino, Karniouchina, & Verma, 2009). For studies in which TR is not the main focus of research, the 10-item version of the TRI is recommended (Parasuraman, 2000).

The 10-item TRI measure was used in the current study. Participants identified their level of agreement with each of the 10 statements about their views toward technology on a Likert scale of 1 (strongly disagree) to 5 (strongly agree) (Parasuraman, 2000; Rose & Fogarty, 2010; Victorino et. al., 2009). The four subscales are optimism (2 items), innovativeness (3 items), discomfort (2 items), and insecurity (3 items). Sample items for this measure include, “You find new technologies to be mentally stimulating” (optimism), “In general, you are among the first of your circle of friends to acquire new technology when it appears” (innovativeness), “It is embarrassing when you have trouble with a high-tech gadget while people are watching” (discomfort), and “You do not consider it safe to do financial business online” (insecure; Parasuraman, 2000; Rose & Fogarty, 2010; Victorino et. al., 2009).

The researcher calculated participants’ total TR scores by averaging participants’ scores on each dimension (i.e., optimism, innovativeness, discomfort, and insecurity dimensions), and summing all four dimensions together (Parasuraman, 2000). Specifically, each TR item was scored. Then, the average of all items on each dimension was calculated. The negative dimension scores (i.e., insecurity and discomfort) were

reverse scored by subtracting the average scores from 6. Lastly, the sum for all four dimensions was calculated. Total scores on the 10-item TRI can range from negative 8 to 32 (Parasuraman, 2000). Higher scores imply greater openness to using technology. Furthermore, TRI scores differentiated among individuals who are more willing to adapt new technologies (i.e., individuals with high TR scores) and individuals who are less likely to adapt new technologies (i.e., individuals with low TR scores; Rose & Fogarty, 2010).

The 10-item version of the TRI also demonstrates good psychometric properties (Victorino et al., 2009). The 10-item version demonstrated strong trait validity that includes sufficient estimates of internal consistency with Cronbach's alpha coefficient of  $\alpha = .77$ . Similarly to the 36-item TRI, a clear 4-factor structure (i.e., innovativeness, optimism, discomfort, insecurity) emerged from the factor analysis (Victorino et al., 2009). The 10-item TRI items demonstrated moderate to strong factor loadings as evidenced by factor loadings ranged from .58 to .86 (Costello & Osborne, 2005). The factor loadings provide more evidence of strong convergent validity for the 10-item TRI (Rose & Fogarty, 2010; Victorino et al., 2009).

### **Primary Communication Inventory**

The PCI (Locke et al., 1956; Navran, 1967) total scale was implemented to operationalize the couple communication variable in the current study. Despite the age of the instrument, the PCI was employed in the current study because of the empirical evidence—including evidence from recent studies—that supports the PCI as a strong measure for differentiating between clinical and nonclinical couples (Shwu-Huey &

Tucker, 1991; Yelsma, 1984), distressed and non-distressed couples (Addis & Bernard, 2002), sexually satisfied and sexually dissatisfied couples (Byers, 2005; MacNeil & Beyers, 2005; Montesi, Fauber, Gordon, & Heimberg, 2011), and overall satisfied and dissatisfied couples (Beach & Ileana, 1983; Dalla, Huddleston-Casas, & Leon, 2008; Idemudia & Ndlovu, 2013; Kahn, 1970; MacNeil & Beyers, 2005; Montesi et al., 2011; Yelsma, 1984). In addition, the PCI was chosen for this study because it demonstrates strong face validity, meaning that questions clearly assess for the construct of communication within couples relationships (Navran, 1967; Yelsma, 1984). In sum, by assessing communication with the PCI, the researcher can discern between individuals who possess more positive or more negative communication skills.

During the initial construction, the PCI was normed on a community sample of clinical and non-clinical married couples (Navran, 1967). The PCI is a 25-item measure in which each participant identifies their communication between oneself and one's partner on a Likert scale ranging from 1 (never) to 5 (very frequently) (Navran, 1967). Scores on the PCI can range from 25 to 125 (MacNeil & Byers, 2005). Items 8, 15, and 17 are reverse scored. Seven of the 25 items assess for nonverbal communication (items 6, 7, 9, 11, 15, 18, & 23) and the remaining 18 items assess for verbal communication (Navran, 1967). A sample item for nonverbal communication include, "Do you know the feelings of your spouse from his/her facial and bodily gestures?" and a sample item for verbal communication include "Do you and your spouse talk over things you disagree about or have difficulties over?" (Navran, 1967). Higher scores indicate better communication in relationships (Navran, 1967; Yelsma, 1984). Navran (1967) found that

non-distressed couples scored an average of 105 on the total scale and distressed couples scored an average of 81 on the total scale (Navran, 1967). Although two subscales emerged on the PCI (verbal and nonverbal communication), it is highly recommended to use the total scale for more accurate results (Beach & Arias, 1983).

The PCI demonstrates good psychometric properties. The PCI total scale is highly correlated with the Marital Relationship Inventory (MRI;  $r = .82$ ), which provides support for its convergent validity (Navran, 1967). Test-retest reliability of  $r = .73$  was found for the PCI; further supporting the stability of the PCI test items (Navran, 1967). The specific duration between administrations was not indicated. PCI Cronbach's alpha coefficients provided evidence of the PCI's internal consistency, with alpha coefficients greater than  $\alpha = .80$  ( $\alpha = .81$ , Byers, 2005; and  $\alpha = .87$ , Montesi et al., 2011). Although the PCI was developed decades ago, it continues to be used widely in relationship communication research, such as the following studies that assess for couples communication with sexual satisfaction (Byers, 2005; Montesi et al., 2011) and relationship satisfaction (Byers, 2005; Dalla et al., 2008; Montesi et al., 2011; Idemudia & Ndlovu, 2013).

Traditionally, for scoring purposes, researchers collect dyadic data when using the PCI and transpose items 5, 6, 7, 9, 11, 15, 21, and 24 from the partner's answers. Although this is the norm, Byers (2005) did not follow this model. Instead, Byers (2005) collected individual data from the community members and staff, alumni, and students from a university who identified as being in a committed relationship for at least 1 year. The results of this study replicated findings from studies that used dyadic data, such that

the quality of communication positively or negatively influenced couples' sexual satisfaction and overall relationships satisfaction (Byers, 2005). The current study modeled after Byers (2005) study and used only individual data. Furthermore, the reliability of results was assessed and add to current literature on PCI used with individual data.

### **Relationship Assessment Scale**

The RAS (Hendrick, 1988) was used to operationalize the construct of relationship satisfaction in the current study. Although the RAS is an older instrument, its distinct features lead the researcher to select this instrument for the current study. The first advantage to RAS is its brevity. This study involved several variables and several instruments for measuring the variables of interest. The researcher chose to use RAS with the intention of minimizing the total number of survey items. Second, the RAS assesses for general relationship satisfaction. Thus, the instrument is inclusive of people who are in various forms of committed relationships such as dating, engaged, domestic partnerships, and marital relationships (Renshaw, McKnight, Caska, & Blais, 2011). Similarly, items contain general relationship words such as "relationship" instead of "marriage" and "partner" instead of "spouse." The researcher chose to use RAS because all types of committed couples will be sampled for the current study. The evolving use of the RAS, from creation of the instrument (Hendrick, 1988) to assessing for modern day relationship satisfaction as it related to media consumption (Zurbriggen, Ramsey, & Jaworski, 2011), and its consistently good psychometrics are the third advantage to using this instrument in this study.



The RAS is a brief, 7-item scale that provides a general measure of relationship satisfaction in couple relationships. This single-factor measure assesses for relationship satisfaction with a 5-point Likert scale ranging from 1 (low satisfaction) to 5 (high satisfaction). Total scores range from 5 to 35, and item 4 and item 7 are reverse scored. Higher scores indicate greater relationship satisfaction (Hendrick, 1988). Sample items include “How well does your partner meet your needs?,” “In general, how satisfied are you with your relationship?,” and “How much do you love your partner?” (Hendrick, 1988). In sum, the RAS is a brief instrument used to operationalize the variable relationship satisfaction in intimate relationships.

The psychometric properties for the RAS instrument are considered good (Hendrick, 1988; Hendrick, Dicke, & Hendrick 1998). Hendrick (1988) found the RAS demonstrated good internal consistency amongst diverse populations, as indicated by Cronbach’s alpha coefficients ranging from  $a = .73$  to  $a = .93$ . Hendrick (1988) found moderate total item-scale correlations ranging from  $r = .57$  to  $r = .76$  and a mean of  $r = .49$ . The RAS total item-scale correlation demonstrated good internal consistency among several studies;  $a = .86$  (Hendrick, 1988),  $a = .90$  (Shi, 2003),  $a = .91$  (Birnbaum, 2007),  $a = .86$  (Allemand, Amberg, Zimprich, & Fincham, 2007),  $a = .88$  (Butzer & Kuiper, 2008), and  $a = .89$  (Zurbriggen et al., 2011). In addition, the RAS exhibited positive and strong correlations with relationship commitment, investment (Hendrick, 1988), and relationship intimacy (Hand et al., 2013). Furthermore, the RAS has demonstrated high test-retest reliability ( $r = .85$ ; specific duration between administrations was not indicated), as well as good convergent validity with The Dyadic Adjustment Scale (DAS;

Spanier, 1976; correlations ranging from 0.80 to 0.88) and with the Kansas Marital Satisfaction Scale (KMSS; Schumm et al., 1986; correlations ranging from 0.64 to 0.74) (Burn & Ward, 2005; Hendrick et al., 1998). Finally, the discriminant validity of the RAS was supported by differentiating between couples that were still together versus couples that separated (Hendrick, 1988), couples that forgive one another (Allemand et al., 2007), couples with high relationship quality versus low relationship quality (Hassebrauck & Fehr, 2002), couples with secure versus insecure attachment styles (Birnbaum, 2007), couples that use positive versus negative humor to de-escalate conflict (Butzer & Kuiper, 2008), and couples with high levels of partner-objectification versus low levels of partner-objectification (Zurbriggen et al., 2011). Although the RAS was developed decades ago, it continues to be used widely in relationship satisfaction research, such as studies that assess for couples satisfaction and couples' intimacy (Hand et al., 2013), forgiveness (Allemand et al., 2007), attachment (Birnbaum, 2007), conflict de-escalation (Butzer & Kuiper, 2008), and partner objectification (Zurbriggen et al., 2011).

### **Technology and Intimate Relationship Assessment**

The constructs of intimacy-enhancing and intimacy-reducing impacts of technology on couples' relationship were measured with the TIRA (Campbell & Murray, in press). The TIRA consists of 22 items with 2 subscales that contain 11 items each. The Intimacy-Enhancing Subscale defines the ways in which participants' use of technology is perceived to positively influence their romantic relationships. In contrast, the Intimacy-Reducing Subscale describes the ways in which participants' use of

technology is perceived to negatively influence their romantic relationships. Participants indicated their level of agreement with each item on a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). A sample item for the TIRA Intimacy-Enhancing Subscale is “Technology helps my partner and me make plans for sharing time together,” and a sample item from the Intimacy-Reducing Subscale is, “When my partner and I are together in the same place, it seems like we do not communicate much because we are both distracted by technology.” Higher scores on the Intimacy-Enhancing Subscale indicate stronger positive perceptions for technology use to enhance relationship intimacy. In contrast, higher scores on the Intimacy-Reducing Subscale reveal stronger negative perceptions of the impact of technology on couples’ intimacy (Campbell & Murray, in press). It is important to note that couples hold both positive and negative views of the ways that technologies impact their relationships, especially because of the multifaceted options of technologies that couples may view as impacting their relationships.

Though the TIRA is a new instrument, the originators of the TIRA found good reliability across items (Campbell & Murray, in press). In order to assess for the internal consistency of the subscale items, Chronbach’s alphas were calculated. TIRA demonstrated good internal consistency, as evidenced by Cronbrach’s alpha of  $\alpha = .86$  for Factor 1 (Intimacy-Enhancing scale items) and a Cronbrach’s alpha of  $\alpha = .83$  for Factor 2 (Intimacy-Reducing scale items). In addition, item-scale correlations were calculated. Subscale items that strongly loaded onto the Intimacy-Enhancing subscale also revealed moderate to high subscale item-correlations ranging from .49 to above .70 and low

subscale correlations with the Intimacy-Reducing Subscale, ranging from .06 to .30. Likewise, subscale items that strongly loaded onto the Intimacy-Reducing subscale also revealed moderate to high item-correlations ranging from 0.52 to just below 0.70 and low correlations with the Intimacy-Enhancing Subscale, ranging from .03 to .29 (Campbell & Murray, in press).

Selected demographic variables, relationship satisfaction, relationship duration, participant age and participant relationship status were used to assess for preliminary validity of the TIRA (Campbell & Murray, in press). First, participant's Intimacy-Enhancing and Intimacy-Reducing subscale scores on TIRA were correlated with participants' relationship satisfaction score to determine the relationship between the set of scores. Correlation analyses revealed a weak, positive correlation between Intimacy-Enhancing Subscale scores and relationship satisfaction ( $r = .06$ ). Similarly, analyses revealed negative and weak correlation between Intimacy-Reducing Subscale scores and relationship satisfaction ( $r = -.31$ ). The weak correlations were expected because the majority of participants identified a "satisfied" and "very satisfied" to the relationship satisfaction question so there was limited variance. In addition to the limited diversity amongst participants' responses, this study used a single item to assess relationship satisfaction opposed to a relationship satisfaction instrument with several items. In sum, both of these factors hindered the strength of the correlations (Campbell & Murray, in press).

In addition to the correlation between TIRA subscale scores and relationship satisfaction, TIRA subscale scores also were correlated with participants' relationship

duration and age (Campbell & Murray, in press). The correlation analyses revealed negative correlations with participants' mean Intimacy-Enhancing Subscale scores with relationship duration ( $r = -.43$ ) and age ( $r = -.32$ ). Similarly, correlation analyses revealed negative and weak correlation between Intimacy-Reducing Subscale scores with relationship duration ( $r = -.28$ ) and age ( $r = -.26$ ). Thus, individuals in a newer relationship and individuals younger in age both resulted in higher Intimacy-Enhancing and Intimacy-Reducing subscale scores. Furthermore, these findings support relationship duration and age do influence how individuals use of technologies impact their relational intimacy (Campbell & Murray, in press).

As a recently-developed instrument, there is limited support for the psychometric properties about the TIRA. The TIRA is a unique instrument because it is the first instrument to assess for the impact of technology use behaviors on couples' intimacy (Campbell & Murray, in press). The current study includes an examination of the psychometric properties of the TIRA in order to provide further evidence of its reliability and validity.

### **Data Analysis**

The data collected was inputted into a Microsoft Excel spreadsheet, and then imported into Statistical Package for the Social Sciences 20 (SPSS) and Statistical Analysis Software (SAS) for data analysis. Demographic data was summarized by SPSS using the descriptive statistics function to describe participants' and their partners' age, gender, ethnic background, level of education, relationship duration, living arrangements, income, and engagement with couples counseling, as well as general questions to assess

for participant technology use behaviors. Additionally, selected demographic variables (i.e., relationship duration, age, and gender) were used for evaluating existing differences between groups (i.e., for RQ2).

After the descriptive statistics analyses, preliminary analyses were used to explore differences between individuals who completed the paper copy survey, and individuals who completed the electronic version of the survey including both, (a) individuals who linked to the survey through social media, and (b) individuals who linked to the survey through their e-mail account. Differences between the three groups were based on participant responses to the main study variables TR, couple communication, intimacy-enhancing and intimacy-reducing uses of technology, as well as participant responses on the individual and relational background characteristics age, relationship duration, and gender. The purpose of using preliminary analyses was to identify and eliminate possible confounding variables from the recruitment and sampling procedures of the current study.

Next, an agglomerative hierarchical cluster analysis and a discriminant analysis were used to explore Research Question 1 (RQ1): Are there distinct profile groups among participants based on their scores on the measures of relationship communication, TR, and the impact of technology on relational intimacy (i.e., intimacy-enhancing impacts and intimacy-reducing impacts)? Next, an ANOVA was used to explore Research Question 2a (RQ2a): If distinct groups emerge in the cluster analysis used to answer RQ1, are there significant differences between groups based on the following demographic variables: age and relationship duration? Then, a Chi-Square analysis was implemented to explore Research Question 2b (RQ2b): If distinct groups emerge in the cluster analysis used to

answer RQ1, are there significant differences between groups based on gender? Lastly, a multiple regression analysis was used to explore Research Question 3 (RQ3): What proportion of the variability in participants' relationship satisfaction is explained by their intimacy-enhancing and intimacy-reducing impacts of technology? The following sections describe in detail the analyses used for each of these steps.

### **Identification of Clusters**

An agglomerative hierarchical cluster analysis and a discriminant analysis were used to test Hypothesis 1: There will be four distinct cluster groups that emerge from the cluster analysis. The cut-off scores for “higher” and “lower” levels of TR, “more positive” and “more negative” communication skills, and further, each cluster group, were based on the mean scores of the population sampled in this study.

- **Group 1.** Individuals with higher levels of TR, more positive communication skill, higher levels of intimacy-enhancing technology use and lower levels of intimacy-reducing technology use.
- **Group 2.** Individuals with lower levels of TR, more positive communication skills, moderate levels of intimacy-enhancing technology use, and moderate levels of intimacy-reducing technology use.
- **Group 3.** Individuals with higher levels of TR, more negative communication skills, moderate levels of intimacy-enhancing technology use, and moderate levels of intimacy-reducing technology use.

- **Group 4.** Individuals with lower levels of TR, more negative communication skills, lower levels of intimacy-enhancing technology use, and higher levels of intimacy-reducing technology use.

**Agglomerative hierarchical cluster analysis.** An agglomerative hierarchical cluster analysis is a commonly used procedure for cluster analysis (Kettenring, 2006). Cluster analysis is a method for identifying patterns in a data set by grouping like objects into clusters such that the objects in each cluster are similar and the clusters are dissimilar (Rencher, 2002). An agglomerative hierarchical cluster analysis begins with each object as its own cluster followed by a process of combining most similar clusters together (Ferreira & Hitchcock, 2009). A clustering analysis was used to explore how many clusters exist among the individuals in the proposed study. A dendrogram, which is a visual representation of the clusters and the distances between the clusters, was used in the study to illustrate the formation of the final clusters (Rencher, 2002).

Within an agglomerative hierarchical clustering analysis, there are several clustering approaches. Wards minimal variance algorithm approach to clustering was used in this study. Wards approach is similar to other clustering approaches such that all objects start with their own cluster before merging with other clusters in a process that continues until there are a smaller number of clusters to represent the data (Ferreira & Hitchcock, 2009). However, Wards approach differs from linkage clustering approaches because cluster distance is not directly used to determine which clusters combine; instead the least sum of total sum of squares error (SSE) is calculated to determine which of the two clusters that have the least SSE merge together. As a result, Wards minimal variance



algorithm approach to clustering minimizes the sum of the squares of the distances between two potential clusters that merge together. Accordingly, Wards approach is found to consistently perform better than other clustering approaches (Ferreira & Hitchcock, 2009). In sum, Wards approach to clustering groups allows for the current study to explore profile types of technology use behaviors and couples relationships.

Four clusters were hypothesized to emerge from the agglomerative hierarchical clustering analysis using Wards minimal variance algorithm method. The dendrogram was used in the current study to determine the number of clusters. The researcher confirmed the four clusters within the conceptual context of the current study. Because the agglomerative hierarchical clustering analysis does not calculate a group's position relative to other groups (i.e., "high" and "low", "positive" and "negative"), cluster group averages were calculated to determine which groups scored "higher" and "lower" on TR and "more positive" and "more negative" on communication skills. The average provided each group with a reference point in relation to other groups within the context of the study's sample.

**Discriminant analysis.** A discriminant analysis was used to further explore Hypothesis 1: There will be 4 distinct cluster groups that emerged from the cluster analysis. The discriminant analysis is a data analysis method used to help describe differences between groups with as few variables (dimensions) as possible (Burns & Burns, 2008). Therefore, in the proposed study, a discriminant analysis was used to further explore differences between clusters based on the four variables (i.e., TR, communication skills, intimacy-enhancing and intimacy-reducing technology use) used

to determine group membership. Specifically, which of these four variables, or combination of these four variables (i.e., a new variable), contribute most to group separation, were determined by the discriminant analysis. Better understanding which variables contribute most to group differences was important for three reasons: 1) increasing group parsimony, 2) minimizing misclassification of individuals into group categories, and 3) predicting future group membership.

### **Identifying Group Differences**

**Analysis of variance.** An ANOVA was used to test Hypothesis 2a: significant differences between groups exist based on demographic variables relationship duration and age. Because variables TR, communication skills, and intimacy-enhancing and intimacy-reducing uses of technology have not been studied together, specific hypothesized differences were unknown a priori because the impact of hypothesized groups on relationship duration and age is unknown. Thus, for the current study specific hypothesized differences were not speculated. Therefore, hypothesis 2a explored if the 4 hypothesized groups of individuals significantly differ on the following selected demographic variables: relationship duration and age. As a result, the independent (predictor) variables were the hypothesized groups. The dependent variables were the demographic variables age and relationship duration. The results of the ANOVAs determined which group means significantly differed. In sum, ANOVAs were utilized to determine significant differences between groups based on selected demographic variables relationship duration and age.

**Chi-square test.** A Chi-Square Test was used to test Hypothesis 2b: significant differences between groups exist based on the demographic variable gender. Similarly to relationship duration and age, specific hypothesized differences were unknown a priori because the impact of grouped variables TR, communication skills, and intimacy-enhancing and intimacy-reducing uses of technology on gender had not been studied before. Thus, a Chi-Square Test was implemented in the current study to test if the distribution of the categorical variable gender differed across the four different groups.

**Multiple regression analysis.** A multiple regression analysis was used to test Hypothesis 3: after controlling for relationship duration, age, and gender technology use will still predict relationship satisfaction with (a) intimacy-enhancing technology positively related to relationship satisfaction, and (b) intimacy-reducing technology use negatively related to relationship satisfaction. In this analysis, the independent variables (predictor) were the TIRA subscales (i.e., intimacy-enhancing and intimacy-reducing impacts of technology on couples' intimacy). The dependent variable was relationship satisfaction. A multiple regression analysis determined the proportion of variance that the TIRA subscales contribute to relationship satisfaction. A multiple regression analysis was used to determine both overall significance and the level of significance for each predictor variable.

### **Pilot Study**

The main objective of the pilot study was to obtain feedback on the methodology prior to administering the full study. The three goals of the pilot study were to gain feedback on (a) time estimates for completing survey, (b) the format of survey and clarity

of items, and (c) the differences between the electronic survey and paper copy survey. As a result of administering a pilot study, necessary modifications were identified, and these are described in this section, along with a summary of the feedback and revisions made to the full study.

### **Research Questions and Hypotheses**

The purpose of the pilot study was to gain feedback about the procedures and process of completing the survey instrument. Therefore, there were no research questions or hypotheses addressed in the pilot study.

### **Participants**

The pilot study recruitment resulted in a total sample size of 12 individual students in undergraduate, masters, and doctoral classes in the UNCG Department of Counseling and Educational Development. Eleven of the twelve participants identified as female (91.7%) and identified being in heterosexual relationships with their male partner. The one remaining participant identified as male (8.3%) and identified being in a heterosexual relationship with a female partner. Of these, seven participants identified as being from Caucasian (58.3%), four African American (33.3%), and one Latino (8.3%) ethnic backgrounds. Participants' ages ranged from 19 to 48 years old with a mean age of 29.5 years old ( $SD = 9.54$ ). Each participant was deemed eligible to participate in the study and agreed to the informed consent before participating in the pilot study.

### **Instrumentation**

The same instrumentation was used in the pilot study as outlined in the full study. Each participant completed: (a) the demographic survey, (b) the TRI (Parasuraman,

2000), (c) the PCI (Locke et al., 1957; Navran, 1967), (d) the RAS (Hendrick, 1988), and (e) the TIRA (Campbell & Murray, in press). Participants answered a total of 100 test items.

## **Procedures**

Institutional Review Board (IRB) approval at the researcher's institution was not required for the pilot study because the data were not analyzed. Upon approval from CED classroom instructors, undergraduate and master's level students in counselor education classes were contacted via email by the researcher and asked to participate in the pilot study. Initially, six participants completed the electronic version of the survey, and three participants completed the paper copy version of the survey. Because of the uneven response rate and the lack of reaching the minimum total number of participants (i.e., 10 participants), the researcher contacted doctoral students in counselor education classes via email to ask for more volunteers to participate in the pilot study. Three doctoral students volunteered to complete the paper version of the survey. After the 12 surveys were complete, the researcher first calculated how long it took individuals to complete the entire survey. Second, the researcher evaluated participants' feedback about the format of the survey and the clarity of items. Third, the researcher assessed for noticeable differences between responses of participants' who completed the electronic survey and participants' who completed the paper copy survey. Finally, the researcher integrated the feedback and modification to the full study.

## **Integrated Feedback**

**Time estimation.** After the 12 surveys were complete, the researcher calculated how long it took each individual to complete the survey. Participants who completed the paper copy of the survey took an average of 17 minutes. Their times ranged from 13 minutes to 25 minutes with a range of 12 minutes. Notably, this average was calculated after dropping two outlier times (37 minutes and 95 minutes) because both participants indicated that they did not complete the survey in one sitting. Participants who completed the electronic survey took an average of 28 minutes to complete the survey. Their times ranged from 12 minutes to 51 minutes, with a range of 39 minutes. All 6 participants' duration times were included in the total average even though some duration times could be considered outliers. The researcher included all times because none of the participants indicated that the survey was not completed in one sitting. The grand mean was 23 minutes. As such, the researcher changed the estimated time to complete survey on consent form from 20 minutes to 20-25 minutes.

**Format, clarity, and other feedback.** Next, the researcher evaluated participants' feedback about the format of the survey, the clarity of items, and any other relevant feedback provided by participants. The researcher summarized and categorized the feedback provided by participants (see Table 5).

Table 5

Summary of Participants Feedback on Format, Clarity, and Other

Format	Clarity	Other
<ul style="list-style-type: none"> <li>Question on pornography use seemed out of place and potentially not relevant for the survey.</li> </ul>	<ul style="list-style-type: none"> <li>Add &lt; 1-hour option for scaling the amount of time spent using specific technology devices and/or services.</li> </ul>	<ul style="list-style-type: none"> <li>Paper copy survey – more concerned with breach of confidentiality and resulted in being less honest when answering questions.</li> </ul>
<ul style="list-style-type: none"> <li>Include questions based on estimated partners' use of technology to address differences that may impact intimacy.</li> </ul>	<ul style="list-style-type: none"> <li>Provide a definition of technology at the beginning of the survey</li> </ul>	<ul style="list-style-type: none"> <li>Discomfort answering questions about pornography use and dating sites because in committed relationship.</li> </ul>

**Format.** The researcher incorporated a question on participants' partners estimated amount of leisure time spent using technology, as well as a question to address the differences in amount of time, and the potential impact of these differences have on couples' intimacy. Some feedback from participants suggested potential irrelevance for the pornography and dating and hook-up applications survey questions. The researcher decided to still include the dating and hook-up questions and the pornography question in the survey. Additionally, the researcher decided to add an extra question on pornography use to differentiate between individual use of pornography and couple's use of pornography. The researcher decided to keep both questions because an individual's investment in dating and hook-up applications and individual use of pornography, who

also identifies as being in a monogamous relationship, could have negative implications for their relational intimacy.

**Clarity.** The researcher included a < 1-hour option for scaling the amount of time spent using specific technology devices. The researcher included a definition of technology at the beginning of the survey. The definition was included in the consent form, as well as again at the beginning of technology use questions on the survey.

**Other.** The researcher made edits to the consent form to increase confidentiality and anonymity of the paper copy survey. For the main study, the researcher provided participants with the option of mailing their paper copy surveys to the researcher in efforts to increase safety and comfort when answering uncomfortable questions about technology use and relationship intimacy.

**Differences between paper copy and electronic survey.** Next, the researcher assessed for noticeable differences between participants' responses who completed the electronic survey and participants' who completed the paper copy survey. The differences between participants' responses on the paper copy versus electronic copy appeared to fall into three categories: confidentiality, time, and feedback. The researcher summarized participants' feedback, categorized participants' feedback into 3 categories, and then assessed for differences in participants' feedback between the paper and electronic versions of the survey (see Table 6).



Table 6

Summary of Differences Between Hard and Electronic Version Survey Responses

<b>Category</b>	<b>Paper Copy</b>	<b>Electronic Copy</b>	<b>Possible Rationale for Observed Differences</b>
Confidentiality	<p>Concern for confidentiality and anonymity of their responses to the survey.</p> <p>Hesitation to be completely honest with responses to survey.</p>	<p>No concern for confidentiality, anonymity, or hesitation to complete answers honestly.</p>	<p>Participants that completed the electronic copy may have not questioned the confidentiality or anonymity of their responses and may have felt safer to be completely honest with responses.</p>
Time	<p>All participants indicated start time and end time</p> <p>On average, these individuals took less time to complete the survey</p>	<p>Participants that completed the electronic survey did not indicate their start time.</p> <p>On average, these individuals took longer to complete the survey.</p>	<p>Might be quicker to complete the paper copy survey because it may be easier to refer back to instructions.</p> <p>Might be multitasking on their computer, which detracts from efficiency for completing the survey.</p>
Feedback	<p>Provided feedback as they went through the survey</p> <p>More likely to provide appropriate additional comments.</p>	<p>More likely to provide inappropriate responses when prompted to provide additional comments about the survey.</p>	<p>May mean there is more accountability for individuals that take the paper copy version.</p> <p>Overall, this information may mean that individuals who complete the paper copy version of the survey pay closer attention to the actual questions being asked.</p>

**Confidentiality.** Participants who completed the paper copy survey were more likely to report concern for confidentiality and anonymity of their responses to the survey. In addition, some of these participants reported feeling hesitant to answer items completely honestly for fear of someone other than the researcher seeing their responses. Participants who completed the electronic survey did not indicate concern for confidentiality or hesitations with being completely honest when answering survey items. The rationale for these differences may be that individuals who completed the electronic survey did not fear a breach in confidentiality or anonymity of survey responses. This may also mean that these participants felt safer to be more honest with their responses.

**Time.** All participants who completed the paper copy survey included the time in which they started the survey and the time in which they finished the survey. In addition, on average, these participants took less time to complete the entire survey. As mentioned in previous section, the average time to complete the paper copy survey was calculated after dropping two outlier times (37 minutes and 95 minutes). In comparison, none of the participants who completed the electronic survey specified the time they started the survey. Fortunately, the online survey program, Qualtrics, automatically saves start time, end time, and calculates the duration of time for each individual who completed the survey. Additionally, on average, these participants took longer to complete the survey. Potential rationales for observed differences may be that the paper copy survey is quicker to complete because it is easier to refer back to the instructions. Also, the electronic survey may take longer because individuals could be multitasking on their computer, which detracts from efficiency for completing the survey.

**Feedback.** Participants who completed the paper copy survey were more likely to provide feedback throughout the entire survey. The only participant who responded to the following question was one of the individuals who completed a paper copy version of the survey: “Please provide feedback on this section. For example, provide feedback on the organization, clarity of items, etc.”. Additionally, on average, participants who completed the paper survey were more likely to provide appropriate responses to questions that inquired about additional comments to better the survey.

In comparison, participants who completed the electronic survey were more likely to provide inappropriate responses when prompted to provide additional comments about the survey. In general, these participants would respond to questions that prompted for additional comments with comments about their relationship dynamics as it relates to technology use, instead of additional comments or feedback to improve the survey. For example, when asked to “provide additional comments and feedback for how I can improve this survey,” one participant responded with “my partner is on the phone a lot but when I'm on the phone he wants to know what I am doing and who I'm talking to.” When asked to provide “additional comments or information that / you think/feel would be important to include in this section,” another participant’s response was “Technology has caused a lot of issues because one of us is less busy than the other. So the one feels neglected.” Similarly, another participant responded to the same question by saying, “Interferes with personal time and that get annoying, like at a restaurant; my partner is on the phone a lot but when I'm on the phone he wants to know what I am doing and who I'm talking to.”

### **Other Modifications to the Full Study**

The researcher made other additional modifications to the format of the paper copy survey for the fully study. First, in the “Voluntary Consent by Participants” section, the researcher removed all language that referred to “checking a box” to agree or disagree with informed consent. Then, at the end of this section, the researcher inserted the statement, “By completing this survey, I acknowledge that I have read the informed consent, match the inclusion criteria, and agree to participate in this study.” This change was implemented to decrease the number of potential participants who would be dropped from the study by not checking the “I accept” box. Second, the researcher reorganized the numbering of items for the demographic and patterns of technology use portions of the survey. Before, the numbering started over at 1 in each section. After, the numbering will be consecutive throughout both sections, starting at 1 and ending at 45. The researcher implemented this change to increase clarity and organization of the questions in order to increase ease of use for participants. Third, the researcher included a definition of a “monogamous intimate relationship” at the beginning of the survey. The definition was included to clarify participants’ comprehension of “monogamy” relative to this study, and to increase the likelihood of obtaining a cohesive sample, and accurate responses to survey questions.

Additionally, the researcher made other modifications to both the paper and electronic versions of the survey. First, the researcher included examples for “other” uses of technology devices in the patterns of technology use question section in attempt to increase participants’ identification of “other” technological devices used daily. These

examples included “online shopping” and “Netflix”. Next, the researcher changed the inclusion criteria from a two - year monogamous relationship to a one-year monogamous relationship (Coyne et al., 2011).

### **Summary**

The current study explored individual and relational characteristics that influence how people view and use technology and how this impacts their intimate relationships. The aim of this study was to determine if existing profile groups emerge. The variables of TR, relational communication, and intimacy-enhancing and intimacy-reducing impact of technology on couples’ relationship were operationalized to determine profile groups. Additionally, the demographic variables of relationship duration, age, and gender were examined to determine if significant differences between profile groups exist. Lastly, the proportion of participants’ relationship satisfaction explained by intimacy-enhancing and intimacy-reducing impacts of technology will be examined as well. Further, the research questions and hypotheses, participants, instrumentation, sampling procedures, and data analyses that were used in the study were outlined in this chapter. The next chapter presents the results of this study.

## CHAPTER IV

### RESULTS

The purpose of this study was to identify characteristics that influence how people view the impacts of technology use on their romantic relationships. In Chapter III, a detailed description of the methodology was presented. The research questions and hypotheses, as well as a comprehensive description of the participants, procedures, instrumentation, and data analyses were described. In this chapter, the results of the data analyses are reported. A description of the research sample is provided, and this is followed by a discussion of the findings of the data analyses used to address the research questions proposed in Chapter III.

### **Results**

#### **Description of the Sample**

Of the 275 electronic and paper copy surveys started by participants, 225 (81.8%) surveys were completed. Of these, another 17 participants were dropped from the data analyses due to several omitted questions (i.e., missing data at random; Acock, 2005) that ranged from 3 to 11 skipped questions. As a result, 208 (75.6%) surveys were fully completed. Of the 208 fully completed surveys, 193 (92.8%) participants completed the survey electronically, while 15 (7.2%) participants completed the paper copy version of the survey.

Of the 208 participants, 166 (79.8%) self-identified their gender as female, 40 (19.2%) identified as male, and 2 (1%) participants did not identify their gender. One hundred and ninety-four (93.3%) participants identified their sexual orientation as heterosexual, 1 (0.5%) participant was homosexual, 3 (1.4%) were lesbians, 3 (1.4%) were gay, 5 (2.4%) were bisexual, 1 was (0.5%) queer, and 1 (0.5%) participant identified their sexual orientation as “other.” Of the 166 female participants, 159 (95.8%) reported the gender identity of their partners as male, and 7 (4.2%) of females reported the gender identity of their partners as female. Of the 40 male participants, 38 (95%) reported the gender identity of their partners as female, and 2 (5%) reported the gender identity of their partners as male. Most participants were Caucasian (n = 181; 87%), followed by African American (n = 12; 5.8%), Latino/Hispanic (n = 5; 2.4%), Asian (n = 4; 1.9%), other (n = 3; 1.4%), and Native American (n = 1; 0.5%). Two (1%) participants did not identify their ethnic backgrounds. Of the three participants who identified as “other” ethnic backgrounds, 1 (0.5%) participant identified as “mixed,” 1 (0.5%) was “Asian/Caucasian,” and 1 (0.5%) participant identified their ethnic background as “African American/Hispanic.” About two-thirds of the 208 participants reported their highest level of education as a Bachelor’s degree (n = 81; 38.9%) or Master’s degree (n = 64; 30.8%), followed by 17 (8.2%) participants who reported having a high school education, 17 (8.2%) participants with PhDs, 16 (7.7%) participants with an Associate’s degree, 3 (1.4%) participants with MDs, and 10 (4.8%) participants reporting having “other” degrees (See Table 7).

About two-thirds ( $n = 137$ ; 65.9%) of the participants identified their relationship status as married. The remaining participants identified as being in a dating relationship ( $n = 42$ ; 20.2%), engaged ( $n = 18$ ; 8.7%), or in a domestic partnership ( $n = 11$ ; 5.3%). Seven (3.4%) participants reported receiving current couples counseling services, and 48 (23.1%) participants reported having previously been in couples counseling. Thirty-three (13.5%) participants reported having been divorced and remarried at least one time before their current partners. Of the 137 married participants, 34 (24.8%) reported having been divorced and remarried at least 1 time. Refer to Table 7.

Table 7

Summary Table of Frequencies for Participants' Background Characteristics

<b>Background Characteristic</b>	<b><i>n</i></b>	<b>%</b>
Gender Identity		
-Male	40	19.2%
-Female	166	79.8%
-Other	0	
Sexual orientation		
-Heterosexual	194	93.3%
-Homosexual	1	0.5%
-Lesbian	3	1.3%
-Gay	3	1.3%
-Bisexual	5	2.4%
-Queer	1	0.5%
-Other	1	0.5%
Relationship Status		
-Married	137	65.9%
-Dating	42	20.2%
-Engaged	18	8.7%
-Domestic partnership	11	5.3%
-Other	0	0.0%
Racial/ethnic background		
-Caucasian American (non Hispanic)	181	87.0%
-African American	12	5.8%



-Latino/Hispanic	5	2.4%
-Asian	4	1.9%
-Native American	1	0.5%
-Pacific Islander	0	0.0%
-Other	3	1.4%
-No report	2	1.0%
Highest level of education		
-Bachelor degree	81	38.9%
-Masters degree	64	30.8%
-High school degree	17	8.2%
-PhD	17	8.2%
-Associates degree	16	7.7%
-MD	3	1.4%
-Other	10	4.8%
Do you are your partner live in the same household?		
-Yes	174	84.1%
-No	33	15.9%
Couples counseling – current		
-Yes	7	3.4%
-No	200	96.2%
Couples counseling – past		
-Yes	48	23.1%
-No	160	76.9%

Participants' ages ranged from 18 to 70 years old, with a mean age of 35.9 years old (SD = 11.15). The relationship duration of the sample ranged from 1 year (12 months) to a just over 42 years (506 months), with a mean of 10.6 years (127.5 months; SD 118.7). Please refer to Table 8.

Table 8

Summary Table of Central Tendencies for Participants' Age and Relationship Duration

<b>Background Characteristic</b>	<b>Range</b>	<b>Mean</b>	<b>SD</b>
Age	18-70 years	35.9 years	11.15
Relationship duration	12 - 506 months	127.5 months	118.7

Participants reported their technology use during their leisure time for non-work-related activities on a Likert scale of 1 to 7 (1 = 0 hours per week, 2 = <1 hr., 3 = 1-4 hours, 4 = 5-8 hours, 5 = 9-12 hours, 6 = 13-16 hours, and 7 = 17+ hours). Of the 208 participants, 72 (34.6%) people reported using technology 5-8 hours per week, 47 (22.7%) reported 9-12 hours, 35 (16.8%) reported 17+ hours, 34 (16.3%) reported 1-4 hours, 19 (9.1%) reported 13-16 hours, and 1 (0.5%) reported using technology for < 1 hour per week.

In viewing participants' responses to the seven questions used to assess their patterns of technology use during leisure time for non-work-related purposes along the Likert-scale from 1 to 7 (1 = strongly disagree; 7 = strongly agree), the participants' mean scores and standard deviations for each question were as follows: (a) "I use technology to interact and connect with my partner" ( $\mu = 3.6$ ;  $SD = 1.31$ ), (b) "I use technology to interact and connect with people other than my partner" ( $\mu = 4.13$ ;  $SD = 0.90$ ), (c) "I use technology to escape or avoid my partner" ( $\mu = 1.8$ ;  $SD = 1.1$ ), (d) "I use technology to follow up on work tasks" ( $\mu = 3.88$ ;  $SD = 1.26$ ), (e) "I use technology for household management tasks" ( $\mu = 3.44$ ;  $SD = 1.23$ ), (f) "I use technology to stay informed of news and to educate myself" ( $\mu = 4.22$ ;  $SD = 0.87$ ), and (g) "I try not to use technology during my leisure time" ( $\mu = 2.2$ ;  $SD = 1.14$ ).

The means and standard deviations of the total sample for each of the main variables (i.e., TR, couple communication, intimacy-enhancing uses of technology, intimacy-reducing uses of technology, and relationship satisfaction) were calculated (see

Table 9). Participants' total scores on the TR scale ranged from -1 to 32 with a mean score of 15.13 (SD= 5.98); couple communication scale scores ranged from 61 to 120 ( $\mu = 97$ ; SD = 10.32); intimacy-enhancing uses of technology scale scores ranged from 11 to 54 ( $\mu = 33.45$ ; SD = 7.88); intimacy-reducing uses of technology scale scores ranged from 11 to 48 ( $\mu = 26.67$ ; SD = 7.29); and relationship satisfaction scale scores ranged from 10 to 35 ( $\mu = 29.68$ ; SD = 4.92).

Finally, Chronbach's alphas were calculated for instrument scale items. TRI exhibited low internal consistency, as shown by Cronbrach's alpha of  $\alpha = .47$ . PCI demonstrated good internal consistency ( $\alpha = .87$ ), as well as the TIRA, as indicated by Cronbrach's alpha of  $\alpha = .85$  for intimacy-enhancing scale items and a Cronbrach's alpha of  $\alpha = .79$  for intimacy-reducing scale items. Lastly, RAS showed the greatest internal consistency among scale items, as evidenced by Cronbrach's alpha of  $\alpha = .91$ .

Table 9

Summary Table of Means and Standard Deviations for Main Variables

<b>Variable</b>	<b>Total Sample Mean Score</b>	<b>Total Sample SD</b>	<b>Observed Range of Scores for Each Variable</b>	<b>Possible Range of Scores for Each Variable</b>	<b>Cronbach's Alpha for Each Scale</b>
Technology Readiness	15.13	5.98	-1 to 32	-8 to 32	.47
Communication	97.38	10.32	61 to 120	25 to 125	.87
Intimacy-enhancing	33.45	7.88	11 to 54	11 to 55	.85
Intimacy-reducing	26.67	7.29	11 to 48	11 to 55	.79
Relationship Satisfaction	29.68	4.92	10 to 35	5 to 35	.91

## Results of Preliminary Analyses

Prior to the main analyses, preliminary analyses were conducted to explore differences between individuals who completed the paper version of the survey and individuals who completed the electronic version of the survey. Differences between the two groups were examined for the following variables: TR, couple communication, and intimacy-enhancing and intimacy-reducing uses of technology, as well as age, relationship duration, and gender. The purpose of conducting the preliminary analyses was to identify possible confounding variables from the recruitment and sampling procedures of the current study. The Wilks' Lambda MANOVA test, used to determine model significance, was found to be significant:  $\Lambda = 0.87001156$ ,  $F_{7,200} = 4.27$ , ( $p < 0.01$ ; see Table 10). These results suggest that there were statistically significant differences, overall, among participants' scores on the measures of TR, couple communication, intimacy-enhancing uses of technology, and intimacy-reducing uses of technology based on whether participants completed the electronic or paper versions of the survey. ANOVA tests were then run to determine which variables most likely contributed to the statistically significant differences based on survey completion method (see Table 11).

Table 10

Multivariate Analysis Table for Significant Difference between Paper and Electronic Survey

Statistic	Value	F Value	Num DF	Den DF	Pr > F
Wilks' Lambda	0.87001156	4.27	7	200	0.002

The ANOVA analyses revealed that there were statistically significant differences between groups (i.e., those who completed the paper vs. electronic versions of the survey) on the following variables: couple communication ( $F_{1,206} = 6.48, p < .05$ ), age ( $F_{1,206} = 24.04, p < .01$ ), and relationship duration ( $F_{1,206} = 14.93, p < .01$ ). The ANOVA analyses revealed that there were no statistically significant differences between groups based on the following variables: TR ( $F_{1,206} = 2.34, p > .05$ ), intimacy-enhancing uses of technology ( $F_{1,206} = 0.55, p > .05$ ), intimacy-reducing uses of technology ( $F_{1,206} = 0.05, p > .05$ ), and gender ( $F_{1,206} = 0.57, p > .05$ ) (see Table 11).

Table 11

Summary Table of ANOVAs for Participants' Scores on the Measures of TR, Couple Communication, Intimacy-Enhancing Uses of Technology, Intimacy-Reducing Uses of Technology, Age, Relationship Duration, and Gender

Source	DF	SS	MS	F-value	p
<u>TR</u>					
-Between Groups	1	83.150286	83.150286	2.34	0.1274
-Within Groups	206	7313.080484	35.500391		
-Total	207	7396.230769			
<u>Couple Communication</u>					
-Between Groups	1	672.80521	672.80521	6.48	0.0116
-Within Groups	206	21376.42556	103.76906		
-Total	207	22049.23077			
<u>Intimacy-Enhancing</u>					
-Between Groups	1	34.07882	34.07882	0.05	0.4602
-Within Groups	206	12825.44041	62.25942		
-Total	207	12859.51923			
<u>Intimacy-Reducing</u>					
-Between Groups	1	2.67009	2.67009	0.05	0.8232
-Within Groups	206	10987.09914	53.33543		
-Total	207	10989.76923			

<u>Age</u>					
-Between Groups	1	2688.54739	2688.54739	24.04	<.0001
-Within Groups	206	23041.52953	111.85209		
-Total	207	25730.07692			
<u>Relationship Duration</u>					
-Between Groups	1	0.08938488	0.08938488	0.57	0.4505
-Within Groups	206	32.21830743	0.15639955		
-Total	207	32.30769231			
<u>Gender</u>					
-Between Groups	1	196380.973	196380.973	14.93	0.0001
-Within Groups	206	2709572.407	13153.264		
-Total	207	2905953.380			

The researcher calculated the mean scores for participants who completed the electronic version of the survey and the participants who completed the paper version of the survey on the measures of couple communication, age, and relationship duration. As shown in Table 12, compared to participants who completed the paper version of the survey, those who completed the electronic survey were younger, had shorter-duration relationships, and reported more positive couple communication. Due to the smaller sample size of the participants who completed the paper version of this survey, survey completion method was not added to the subsequent data analyses described in the rest of this chapter. The findings of the differences between the groups, however, represent a possible limitation of this study, as will be discussed in Chapter V.

Table 12

Summary Table of Means for Electronic and Paper Copy Scores on Age, Relationship Duration, and Couple Communication

<b>Survey Type</b>	<b>Age</b>	<b>Relationship Duration</b>	<b>Couple Communication</b>
Electronic	34.9 years	119.08 months	97.89
Paper	48.8 years	237.87 months	90.93

## Research Question 1

A hierarchical agglomerative cluster analysis and a discriminant analysis were used to explore Research Question 1 (RQ1): Are there distinct profile groups among participants based on their scores on the measures of TR, couple communication, and the impact of technology on relational intimacy [i.e., intimacy-enhancing impacts and intimacy-reducing impacts?

**Results of the hierarchical agglomerative cluster analysis.** The agglomerative hierarchical cluster analysis used the four variables identified in RQ1 to determine which clusters were most similar. A dendrogram is a visual aid used to help the researcher decide how many distinct clusters formed. Four distinct cluster groups were identified based on participants' scores on the measures of TR, couple communication, intimacy-enhancing uses of technology and intimacy-reducing uses of technology (see Figure 4).

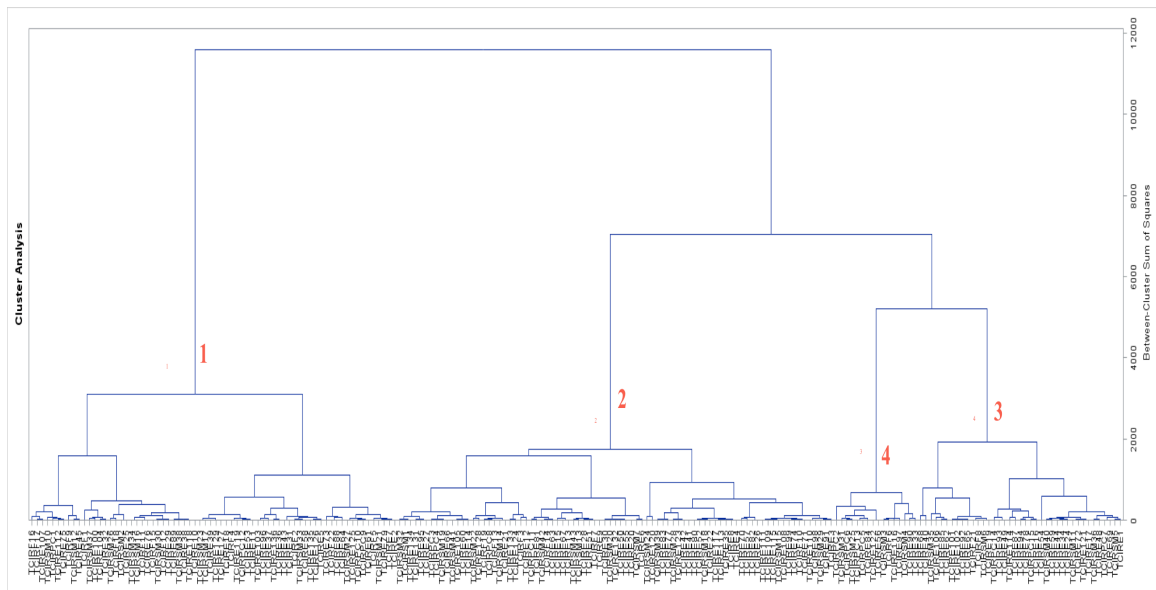


Figure 4. Cluster Analysis Dendrogram

The researcher calculated the means and standard deviations for the following variables: TR, couple communication, intimacy-enhancing uses of technology, and intimacy-reducing uses of technology (see Table 13). The means and standard deviations for individual and relationship background characteristics were calculated for each cluster group.

Table 13

Cluster 1-4 Mean and SD Summary Table for Main Variables and Relational Variables

<b>Cluster 1</b>	<b>Mean</b>	<b>SD</b>
Technology Readiness	15.54*	6.16
Couple Communication	106.87*	5.67
Intimacy-Enhancing	34.51*	8.09
Intimacy-Reducing	22.41	5.52
Relationship satisfaction	31.84*	3.63
Age	33.50	10.97
Relationship duration	109.28	108.29
<b>Cluster 2</b>		
Technology Readiness	14.67	5.72
Couple Communication	95.67	5.67
Intimacy-Enhancing	37.25*	5.04
Intimacy-Reducing	30.54*	6.06
Relationship Satisfaction	29.41	4.35
Age	33.83	9.90
Relationship duration	106.06	95.37
<b>Cluster 3</b>		
Technology Readiness	15.10	6.49
Couple Communication	93.28	5.94
Intimacy-Enhancing	25.05	5.62
Intimacy-Reducing	23.54	6.84
Relationship satisfaction	29.85*	3.77
Age	42.10*	11.03
Relationship duration	199.82*	145.78
<b>Cluster 4</b>		
Technology Readiness	15.63*	5.93
Couple Communication	74.75	5.53



Intimacy-Enhancing	29.56	7.22
Intimacy-Reducing	32.88*	6.30
Relationship satisfaction	21.25	5.99
Age	42.06*	11.41
Relationship duration	155.13*	132.99

*Note.* \* Identifies the means of variables that are greater than the total sample mean for that particular variable.

Descriptive statistics for participants' other demographic variables (i.e., gender identity, sexual orientation, relationship status, racial/ethnic background, and highest level of education achieved) also were calculated for each cluster group (see Table 14). For purposes of describing the clusters, some of the demographic categories have been collapsed to facilitate comparisons between groups [i.e., the Sexual Orientation variable was collapsed to two groups: Heterosexual and Lesbian, Gay, Bisexual, and Queer (LGBQ)]. As shown in Table 14, for all of the cluster groups, most participants were female, heterosexual, married, Caucasian, and educated with at least a Bachelor's degree, which reflects the overall demographics of the sample. Later in this chapter, the results of analyses used to examine whether there were any statistically significant differences among the clusters based on demographic variables of age, relationship duration, and gender will be presented.

Table 14

Clustered Groups Frequency Summary Table for Demographic Variables

Demographic Variable	C1: n	C1: %	C2: n	C2: %	C3: n	C3: %	C4: n	C4: %
Gender Identity:								
-Male	5	7.1%	19	23.2%	11	28.9%	5	31.3%
-Female	65	92.9%	63	76.8%	27	71.1%	11	68.8%
Sexual Orientation:								

-Heterosexual	63	90.0%	78	94%	37	94.9%	16	100%
- LGBQ	7	10.0%	5	6.0%	2	5.1%	0	0.0%
-Homosexual	1	1.4%	0	0%	0	0%	0	0.0%
-Lesbian	1	1.4%	1	1.2%	1	2.6%	0	0.0%
-Gay	1	1.4%	1	1.2%	1	2.6%	0	0.0%
-Bisexual	2	2.9%	3	3.6%	0	0%	0	0.0%
-Queer	1	1.4%	0	0%	0	0%	0	0.0%
-Other	1	1.4%	0	0%	0	0%	0	0.0%
Relationship Status:								
-Dating	15	21.4%	23	27.7%	3	7.7%	1	6.3%
-Domestic partnership	4	5.7%	5	7.2%	1	2.4%	1	6.3%
-Engaged	10	14.3%	6	6%	2	2.6%		
-Married	41	58.6%	49	58.3%	33	84.6%	14	87.5%
Racial/ethnic Background:								
-Caucasian American (non Hispanic)	63	90.0%	76	91.6%	30	78.9%	10	62.5%
-Other	7	10.0%	7	8.4%	8	21.1%	5	19.2%
-African American	2	2.9%	4	4.8%	3	7.9%	3	20.0%
-Asian	2	2.9%	2	2.4%	0	0%	0	0.0%
-Latino/Hispanic	2	2.9%	1	1.2%	2	5.3%	0	0.0%
-Other	1	1.4%	0	0%	3	7.9%	2	13.3%
Education:								
- Less than Bachelor's degree	11	15.7%	11	13.3%	7	17.9%	4	25.0%
-High school degree	5	7.1%	7	8.4%	3	7.7%	2	12.5%
-Associates degree	6	8.6%	4	4.8%	4	10.3%	2	31.3%
-Bachelor's degree	26	37.1%	37	44.6%	13	33.3%	5	31.3%
-Graduate/Professional degree	29	41.4%	31	37.3%	18	46.2%	6	37.5%
-Masters degree	23	32.9%	24	28.9%	12	30.8%	5	31.3%
-PhD	5	7.1%	6	7.2%	5	12.8%	1	6.2%
-MD	1	1.4%	1	1.2%	1	2.6%	0	0%
-Other	4	5.7%	4	4.8%	1	2.6%	1	6.2%

*Note:* \*Total percentage values may be slightly above or slightly below 100% as a result of rounding values to the tenth decimal place. In addition, participants were able to select all options that applied when reporting their racial/ethnic backgrounds.

**Results of the discriminant analysis.** Although distinct cluster groups emerged from the Ward's hierarchical agglomerative cluster analysis, a discriminant analysis was used to further explore differences between clusters to determine which variables, or combination of variables, contributed most to group separation. The discriminant

analysis resulted in three discriminant functions (i.e., linear combinations of variables with relative weights). A function is a unique linear combination of variables such that each variable has an assigned weight that is relative to other variables included in the linear combination. A new dimension (or variable) develops from the uniquely weighted combination of variables. Weights (w) represent the magnitude and direction of each variable's contribution on a shared dimension. Therefore, variables with heavier weights uniquely contribute more to dimension identification and group differences (see Table 15).

Table 15

Discriminant Analysis Summary Table

	<b>Canonical Correlation</b>	<b>Eigenvalue</b>	<b>Proportion</b>	<b>Likelihood Ratio</b>	<b>Approximate F-Value</b>	<b>Num DF</b>	<b>Den DF</b>	<b>Pr &gt; F</b>
<b>1</b>	0.852337	2.6560	0.7974	0.16237224	43.80	12	532.09	<.0001
<b>2</b>	0.630733	0.6606	0.1983	0.59363700	20.06	6	404	<.0001
<b>3</b>	0.119078	0.0144	0.0043	0.98582032	1.46	2	203	0.2347

The first discriminant function was statistically significant at  $F_{12,532.09} = 43.80$  ( $p < .001$ ) and explained almost 80% of differences between clusters. A new dimension (i.e., Couple Communication, to be described more fully below) developed with respect to the unique combination of weighted variables. The second discriminant function was found to be statistically significant at  $F_{6,404} = 20.06$ , ( $p < .001$ ) and explained almost 20% of the variability among the clusters. This second dimension (i.e., Technology-Mediated Intimacy, which also will be described below) emerged with respect to the unique combination of weighted variables. In total, the new Couple Communication dimension

and Technology-Mediated Intimacy dimension combined to contribute to over 99% of variability among the clusters. Thus, these two new dimensions (or variables) best describe differences among the four identified clusters. Finally, the third discriminant function (which corresponded to the Technology Readiness variable) was not found to be statistically significant ( $F_{2,203} = 1.46, p > .05$ ). Therefore, the third dimension will not be further addressed in the interpretation of the clusters.

The combination of the measures of TR, couple communication, intimacy-enhancing uses of technology, and intimacy-reducing uses of technology and their unique weighted contributions (i.e., pooled within-class standardized canonical coefficients) to each new dimension are shown in Table 16. The first dimension relied heavily on the couple communication measure ( $w = 0.94$ ), which means that the variable couple communication had the single highest weight associated with the first dimension. In comparison, TR ( $w = 0.11$ ), intimacy-enhancing uses of technology ( $w = 0.042$ ), and intimacy-reducing uses of technology ( $w = -0.37$ ) had much smaller weights and weaker contributions to the first dimension. Dimension one was identified as Couple Communication (CC) because of the unique contribution from the variable of couple communication (see Table 16).

Table 16

Discriminant Analysis Summary Table for Variable Weights on Dimensions CC and TMI

<b>Variable</b>	<b>CC</b>	<b>TMI</b>
<b>Technology Readiness</b>	0.1143604872	-0.1042080827
<b>Communication</b>	0.9426946491	0.0860733429
<b>Intimacy-enhancing</b>	0.0420558765	0.8255701230
<b>Intimacy-reducing</b>	-0.3663523203	0.5501281857

*Note.* \* TMI is the abbreviation for the Technology-Mediated Intimacy dimension.

While intimacy-enhancing impacts of technology and intimacy-reducing impacts of technology did not uniquely contribute to the first dimension, both uniquely contributed to the second dimension. For dimension two, the measures of both intimacy-enhancing impacts of technology ( $w = 0.83$ ) and intimacy-reducing impacts of technology ( $w = 0.55$ ) had a relatively large weight. This means that the second dimension relied heavily on both intimacy-enhancing impacts of technology and intimacy-reducing impacts of technology because both variables had unique contributions above and beyond the other variables of TR ( $w = -0.10$ ) and couple communication ( $w = 0.09$ ). These two original variables assessed opposing impacts (i.e., enhancing and reducing) of technology use on a single construct (i.e., intimacy), and both scales of intimacy-enhancing and intimacy-reducing impacts of technology were measured with the same instrument (i.e., the TIRA). Therefore, the second dimension was identified as Technology-Mediated Intimacy (TMI; see Table 16).

As a result of the discriminant analysis, TR was found not to be a unique contributor to clustered group differences. TR's contribution to group differences was so small, compared to other original variables, that it was not considered important enough to interpret. The small contribution could be a result of two factors: (a) most people in the sample had high levels of technologically readiness, and therefore, minimal differences were observed on TR, or (b) TR has minimal influence on how people use technology in their intimate relationships. Therefore, the interpretation of RQ 1, RQ2a, and RQ2b will not specifically address the contribution of TR. Finally, the researcher analyzed the new cluster group means associated with the two new dimensions, CC and TMI, to further expound upon differences among the clusters (see Table 17). These findings are integrated into the description of the clusters that is presented below.

Table 17

Summary Table of Cluster Group Means on Dimensions CC and TMI

<b>Cluster</b>	<b>CC</b>	<b>TMI</b>
<b>1</b>	1.840406147	-0.117713106
<b>2</b>	-0.498331743	0.815460114
<b>3</b>	-0.550237251	-1.408106237
<b>4</b>	-4.125477677	-0.282945549

In summary, a discriminant analysis was used to further explore differences among the four clusters. The discriminant analysis revealed that the clusters were most dissimilar on the two new dimensions: CC and TMI. The Cluster 1 and Cluster 4 groups

were found to be relatively different on the CC dimension but not on the TMI dimension. In contrast, Cluster 2 and Cluster 3 groups appeared to differ based on the TMI dimension but not on the CC dimension. Furthermore, the two new dimensions, CC and TMI, are used to help interpret the differences between the four identified cluster groups, and could be used for classifying people into similar groups in the future. The cluster groups are elaborated upon in Chapter V (see Figure 5).

### **Description of the Clusters**

This section integrates the findings from the analyses described above and presents a summary of the descriptive characteristics of each of the four clusters that emerged through the cluster analysis.

**Cluster 1.** Cluster 1 accounted for 33.65% ( $n = 70$ ) of the sample. The majority of participants in Cluster 1 were educated with at least a Bachelor's degree, heterosexual, married, Caucasian and female, with an average age of 33.5, and an average relationship length of a little over 9 years. The range, means, and standard deviation scores for the measures of TR, couple communication, intimacy-enhancing uses of technology, intimacy-reducing uses of technology, and relationship satisfaction were calculated for Cluster 1 participants (Table 13). Cluster 1 participants' scores for the TRI ranged from -1 to 32 ( $\mu = 15.54$ ;  $SD = 6.16$ ), PCI scores ranged from 96 to 120 ( $\mu = 106.87$ ;  $SD = 5.67$ ), TIRA-intimacy-enhancing scores ranged from 20 to 54 ( $\mu = 34.51$ ;  $SD = 8.09$ ), and TIRA-intimacy-reducing scores ranged from 12 to 36 ( $\mu = 26.67$ ;  $SD = 7.29$ ). Additionally, Cluster 1 participants' RAS scores ranged from 10 to 35, with a mean score of 29.68 ( $SD = 5.52$ ). In the discriminant analysis, and relative to other clusters, Cluster

1 had the highest mean on the CC dimension ( $\mu = 1.84$ ). Cluster 1, however, demonstrated negative and lower mean on the dimension TMI ( $\mu = -.12$ ). Thus, Cluster 1 participants reported the most effective communication patterns, greater positive impacts from technology use, and less overall relational impacts from technology use in their intimate relationships.

Thus, overall, compared to the total sample, Cluster 1 participants demonstrated more positive couple communication, intimacy-enhancing impacts of technology, and relationship satisfaction. Also, Cluster 1 participants' levels of intimacy-reducing uses of technology were lower compared to the total sample. The observed differences suggested that Cluster 1 included people who were more effective communicators and used technology more for connecting with their partners. Their secure patterns of communication appeared to transfer into positive uses of technology with their partners. Furthermore, these individuals seemed more satisfied in their relationships as a result of healthier communication in their relationship. Therefore, Cluster 1 group was labeled as the *Secure* cluster.

**Cluster 2.** Cluster 2 participants accounted for 40.87% ( $n = 83$ ) of the sample. The majority of participants in Cluster 2 were educated with at least a Bachelor's degree, heterosexual, married, Caucasian females, and females, with an average age of 33.8 years and an average relationship duration of almost 9 years. The researcher calculated the range, means, and standard deviations for Cluster 2 participants' scores on the TRI, PCI, TIRA-intimacy-enhancing uses of technology, TIRA-intimacy-reducing uses of technology, and the RAS (Table 13). Cluster 2 participants' scores on TRI ranged from 1



to 28 ( $\mu = 14.67$ ;  $SD = 5.71$ ), PCI scores ranged from 81-111 ( $\mu = 95.67$ ;  $SD = 5.67$ ), TIRA-intimacy-enhancing scores ranged from 24 to 54 ( $\mu = 37.25$ ;  $SD = 8.09$ ), and TIRA-intimacy-reducing scores ranged from 16 to 48 ( $\mu = 30.54$ ;  $SD = 6.06$ ).

Additionally, Cluster 2 participants' RAS scores ranged from 14 to 35, with a mean score of 29.41 ( $SD = 4.35$ ). In the discriminant analysis, Cluster 2 demonstrated moderately low mean on the CC dimension ( $\mu = -.50$ ), which suggests moderately ineffective levels of communication with respect to communication patterns relative to other clusters. Cluster 2 participants had the highest mean on the TMI dimension ( $\mu = .82$ ), which suggests that Cluster 2 participants' uses of technology impacted their relationships the most, both by enhancing and reducing relational intimacy.

Compared to the total sample, Cluster 2 participants demonstrated lower levels of relationship satisfaction, as well as more negative communication skills. However, their levels of both intimacy-enhancing and intimacy-reducing uses of technology were higher than the total sample. In fact, compared to all groups, they had the highest levels of intimacy-enhancing uses of technology. In light of Cluster 2 participants' more problematic relationship functioning (as evidenced by their more negative communication dynamics and lower relationship satisfaction), it is likely that these participants' negative relationship dynamics transferred into inconsistent uses of technology (i.e., higher levels of intimacy-enhancing and intimacy-reducing uses of technology) with their partners. Therefore, Cluster 2 was identified as the *Pursuer* cluster.

**Cluster 3.** Cluster 3 accounted for 18.75% (n = 39) of the sample. The majority of Cluster 3 participants were educated with at least with a Bachelor's degree, heterosexual, married, Caucasian, and female; their average age was 42.08 years, and their average relationship duration was almost 17 years. Cluster 3 participants' TRI scores ranged from 2 to 32 ( $\mu = 15.1$ ; SD= 6.49), PCI scores ranged from 81 to 112 ( $\mu = 93.28$ ; SD = 5.94), TIRA- intimacy-enhancing uses of technology scores ranged from 11 to 37 ( $\mu = 25.05$ ; SD = 5.62), and TIRA-intimacy-reducing uses of technology scores ranged from 11 to 38 ( $\mu = 23.54$ ; SD = 6.83). Additionally, these participants' RAS scores ranged from 22 to 35 with a mean score of 29.85 (SD = 3.77). Like Cluster 2 in the discriminant analysis, Cluster 3 participants demonstrated negative and moderately low means on the CC dimension (Cluster 3:  $\mu = -.55$ ) relative to other clusters. Thus, like Cluster 2, Cluster 3 participants reported moderately ineffective communication patterns in their intimate relationships. Relative to other clusters, Cluster 3 had the lowest mean on the TMI dimension ( $\mu = -1.41$ ). In contrast to Cluster 2, Cluster 3 individuals' uses of technology had the lowest impact on their relationships both in terms of enhancing and reducing relational intimacy.

Compared to the total sample, participants in Cluster 3 demonstrated lower levels of intimacy-enhancing and intimacy-reducing uses of technology, as well as more negative communication. In particular, their levels of intimacy-enhancing impacts of technology were lowest of all the cluster groups. However, they also demonstrated higher levels of relationship satisfaction as compared to the total sample. Overall, Cluster 3 was the only group that consistently displayed lower means than the total

sample means on variables of couple communication, intimacy-enhancing uses of technology, and intimacy-reducing impacts of technology, which could suggest some levels of indifference toward technology and dismissive behaviors toward their partners. These participants' more negative communication patterns seemed to transfer into their technology-facilitated interactions, as evidenced by lower uses of technology that enhance or reduce intimacy. The higher levels of relationship satisfaction could result from their comfort with being distant from their partner. Therefore, Cluster 3 was identified as the *Dismissive* cluster.

**Cluster 4.** Cluster 4 accounted for 7.69% ( $n = 16$ ) of the sample. The majority of participants in Cluster 4 were educated with at least a Bachelor's degree, heterosexual, married, Caucasian, and female with an average age of 42.1 years old and average relationship duration of almost 13 years. Cluster 4 participants' TRI scores ranged from 7 to 26 ( $\mu = 15.63$ ;  $SD = 5.93$ ), PCI scores ranged from 61 to 81 ( $\mu = 74.75$ ;  $SD = 5.53$ ), TIRA-intimacy-enhancing uses of technology scores ranged from 14 to 41 ( $\mu = 29.56$ ;  $SD = 7.23$ ), TIRA-intimacy-reducing uses of technology scores ranged from 25 to 44 ( $\mu = 32.88$ ;  $SD = 6.3$ ). Additionally, participants' RAS scores ranged from 10 to 30 and with a mean score of 21.25 ( $SD = 5.99$ ). In the discriminant analysis, Cluster 4 had the lowest mean on the CC dimension ( $\mu = -4.13$ ) relative to other clusters. Individuals in Cluster 4 also had the least effective communication patterns relative to other clusters. Like Cluster 1, Cluster 4 participants demonstrated negative and lower average on the TMI dimension (Cluster 1:  $\mu = -.28$ ). Thus, Clusters 1 and 4 appeared to have very similar characteristics on the TMI dimension.

Compared to the total sample, participants in Cluster 4 demonstrated the most negative communication patterns, the highest levels of intimacy-reducing impacts of technology, and lower levels of intimacy-enhancing impacts of technology and relationship satisfaction. The observed differences suggest that Cluster 4 included people who were less effective communicators, and whose uses of technology more negatively impacted their relationship. Their insecure patterns of relationship communication appeared to transfer into their more destructive uses of technology with their partners. Thus, Cluster 4 was labeled the *Fearful* cluster.

### **Research Question 2a**

Research Question 2a was as follows: If distinct groups emerge in the cluster analysis used to answer RQ1, are there significant differences between groups based on the following demographic variables: age and relationship duration? An ANOVA test was used to determine if there were significant differences based on age among the four clusters. The results of the ANOVA found significant differences based on age among the four clusters at  $F_{3,204} = 8.47 (p < .01)$ . Similarly, ANOVA was used to determine if there were significant differences in relationship duration among the four clustered groups. The results of the ANOVA indicated significant differences of relationship duration among the four clusters at  $F_{3,203} = 7.29 (p < .01)$ . Refer to Table 18.

Table 18

ANOVA Summary Table for Group Differences Between Age and Relationship Duration Among Clusters 1, 2, 3, and 4

Source	df	SS	MS	F	p
<u>Age</u>					
-Between Groups	3	2849.25	949.75	8.47	.000
-Within Groups	204	22880.83	112.16		
-Total	207	25730.08			
<u>Relationship Duration</u>					
-Between Groups	3	281871.41	93957.14	7.29	.000
-Within Groups	203	2616185.36	12887.61		
-Total	206	2898056.76			

A Tukey's HSD post hoc analysis was used to further test significant differences in age found among the clusters. The Tukey's HSD post hoc analysis revealed that age was significantly different between Cluster 1 and Cluster 3 ( $p < .01$ ), and Cluster 1 and Cluster 4 ( $p < .05$ ), with Cluster 1 participants having a younger age ( $\mu = 33.50$  years) than both Cluster 3 ( $\mu = 42.10$  years) and 4 ( $\mu = 42.06$  years). Similarly, age was found to be significantly different between Cluster 2 and Cluster 3 ( $p < .01$ ), and Cluster 2 and Cluster 4 ( $p < .05$ ). Participants in Cluster 2 ( $\mu = 33.83$  years) were, on average, younger as compared to participants in Cluster 3 ( $\mu = 42.10$  years) and 4 ( $\mu = 42.06$  years). No significant differences were found between Clusters 1 and Cluster 2 ( $p > .05$ ) and Clusters 3 and Cluster 4 ( $p > .05$ ). Therefore, Cluster 1 participants and Cluster 2 participants were significantly younger than Cluster 3 participants and Cluster 4 participants. See Table 19.

Table 19

Tukey's HSD Post Hoc Analysis Summary Table

Cluster		Age	Relationship Duration
		Sig.	Sig.
Cluster 1	Cluster 2	0.998	.995
	Cluster 3	0.000	.001
	Cluster 4	0.021	.466
Cluster 2	Cluster 3	0.000	.000
	Cluster 4	0.025	.367
Cluster 3	Cluster 4	1.000	.547

A Tukey's HSD post hoc analysis was used to further test for significant differences in relationship duration found among the clusters. Relationship duration was significantly different between Cluster 1 and Cluster 3 ( $p < .01$ ), and between Cluster 2 and Cluster 3 ( $p < .01$ ). In both cases, the average length of participants' relationship in Cluster 3 ( $\mu = 199.82$  months) was longer than Cluster 1 ( $\mu = 109.28$ ) and Cluster 2 ( $\mu = 106.06$  months). Statistically significant differences were not found among other clusters. Therefore, Cluster 3 participants had statistically significant longer lasting relationships than Cluster 1 participants and Cluster 2 participants.

### Research Question 2b

A Chi-Square analysis was used to test Research Question 2b: If distinct groups emerge in the cluster analysis used to answer RQ1, are there significant differences between groups based on gender? See Table 20. There were two missing cases (1%) for this analysis, resulting in an N of 206. Significant differences were found based on gender among the four clusters at  $X^2(3, N=206) = 13.98, (p < .01)$ . See Table 20.

Table 20

Chi-Square Summary Table for Group Differences Based on Gender

Source	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	13.975	3	.003
Likelihood Ratio	14.458	3	.002
Linear-by-Linear Association	11.980	1	.001
N of Valid Cases	206.000		

Table 21

Chi-Square Summary Table for Significant Residuals Based on Gender

Gender ID	Cluster				Total
	Cluster 1	Cluster 2	Cluster 3	Cluster 4	
<b>Male</b>					
-Count	5.0	19.0	11.0	5.0	40
-%Within gender	12.5%	47.5%	27.5%	12.5%	100%
-%Within cluster	7.1%	23.2%	28.9%	31.3%	
-Std. residual	- 2.3	0.8	1.3	1.1	
<b>Female</b>					
-Count	65.0	63.0	27.0	11.0	166
-%Within gender	39.2%	38.0%	16.3%	6.6%	100%
-%Within cluster	92.9%%	76.8%	71.1%	68.8%	
-Std. residual	1.1	- 0.4	- 0.7	- 0.5	

A post hoc analysis was used to determine which groups differed significantly from one another. The standard residual for Cluster 1 males resulted in a residual value of -2.3. The standard residual -2.3 was found to be statistically significant because it was greater than critical value  $\pm 1.96$  ( $p < .05$ ). No other standardized residuals were found significant. The negative value indicated that there were fewer males than expected in

Cluster 1. The underrepresented number of males in Cluster 1 was the only contributing factor to the significant differences found from the Chi-Square analysis.

### Research Question 3

A multiple regression analysis was used to test Research Question 3: Independent of the results of the cluster analysis, what proportion of the variability in participants' relationship satisfaction is explained by their intimacy-enhancing and intimacy-reducing impacts of technology? A summary of the multiple regression analysis results is described in Table 22.

Table 22

Multiple Regression Summary Table for Perceived Impacts of Technology and Relationship Satisfaction

Model	Variable	B	Std. error	$\beta$	Sig.	t	Semi- Partial	Tol.	VIF
1	Age	-.05	.05	-.11	.34	-0.96	-.07	.40	2.48
	Gender	-.49	.87	-.04	.58	-0.56	-.04	.99	1.01
	Rel. Duration	-.00	.01	-.05	.65	-0.46	-.03	.41	2.46
$R^2 = .022$									
2	Intimacy- enhancing	.10	.04	.17	.01	2.69	.15	.85	1.17
	Intimacy- reducing	-.39	.04	-.58	.00	-9.90	-.56	.96	1.04
	Age	-.08	.04	-.18	.04	-2.03	-.12	.40	2.53
	Gender	-.82	.71	-.07	.25	-1.15	-.07	.98	1.02
	Rel. Duration	-.00	.00	-.01	.88	-0.15	-.01	.39	2.54
	$R^2 = .352$								
Change in $R^2 = .330$									

\* $p < .001$



The multiple regression model was found to be statistically significant at  $F_{5,200} = 21.75$ , ( $p < .01$ ). After controlling for age, gender, and relationship duration, participants' scores on the TIRA intimacy-enhancing scale significantly predicted relationship satisfaction ( $\beta = .17$ ,  $p < .01$ ), and their scores on the TIRA-intimacy-reducing scale also significantly predicted relationship satisfaction ( $\beta = -.58$ ,  $p < .01$ ). In fact, about one-third (33%) of the variance in couples' relationship satisfaction was explained by their intimacy-enhancing and intimacy-reducing impacts from technology use, as evidenced by the change in R-squared (change in  $R^2 = .33$ ). The relational impacts from couples' technology use seemed to capture a substantial amount of the variance in their relationship satisfaction. In addition, participants' scores on the intimacy-reducing scale was the stronger predictor of relationship satisfaction, as demonstrated by the greater beta value ( $\beta = -.58$ ,  $p < .01$ ). Therefore, couples' relationship satisfaction seems to be more heavily influenced by their intimacy-reducing uses of technology.

Semi-partial correlations were calculated to address the variance shared among the predictor variables with other variables. TIRA-intimacy-reducing scores had the greatest semi-partial correlation with relationship satisfaction ( $sr = -.56$ ). TIRA-intimacy-enhancing scores had the second greatest semi-partial correlation with the criterion variable, relationship satisfaction ( $sr = .15$ ). Minimal multicollinearity is speculated for the variable intimacy-enhancing uses of technology because of its low standard of error (Std. E = .04), high tolerance (T = .85), and low variance inflation

factors ( $VIF = 1.17$ ). Similarly, minimal multicollinearity is speculated for predictor variable intimacy-reducing uses of technology because of its low standard of error (Std. E = .04), high tolerance ( $T = .96$ ), and low VIF ( $VIF = 1.04$ ). Refer to Table 22.

Therefore, both perceptions of the intimacy-enhancing and intimacy-reducing impacts of technology on participants' intimate relationships were predictive of their levels of relationship satisfaction.

### **Summary**

The current study resulted in several major findings. Data analyses were completed for the final sample, which included 208 individuals. The demographic profile of the sample revealed that most participants were educated with at least a Bachelor's degree, Caucasian, married, heterosexual, and female. Multivariate analyses were used to explore preliminary differences between individuals who completed the paper copy version of the survey, and individuals who completed the electronic versions of the survey, and differences were found based on couple communication, age, and relationship duration. An agglomerative hierarchical cluster analysis was used to determine whether participants could be grouped based on their reported levels of TR, couple communication, intimacy-enhancing uses of technology and intimacy-reducing uses of technology, and four distinct clusters emerged. A discriminant analysis was then used to further explore differences between the four clusters, and the discriminant analysis revealed that clusters varied primarily along two key dimensions, CC and TMI. Next, data analyses (i.e., ANOVA and chi-square) demonstrated that there were statistically significant differences among the cluster groups based on the following

demographic variables: age, relationship duration, and gender. Finally, a multiple regression demonstrated that both participants' perceptions of the intimacy-enhancing and intimacy-reducing impacts of technology were predictive of relationship satisfaction. The implications of these results are outlined in the Chapter V.

## CHAPTER V

### DISCUSSION

Chapter IV presented the results of this study on the impacts of technology on intimate relationships. In the current chapter, a discussion of the results, including the major findings and limitations to the study, are described. Chapter V also addresses the implications of this study for counselors and counselor educators, as well as directions for future research.

In the past two decades, technology development and use have proliferated in societies across the world (Cole et al., 2009). As a result, technology has become an intricate part of daily routines for the majority of individuals in first world countries, including the United States (Duggan, & Brenner, 2013; Rainie, 2010; Smith, 2012). In people's personal and professional lives, technology advancements serve as platforms for fulfilling entertainment, work, and intimate relationship needs (Ku, Chu, & Tseng, 2013). As a result, the ways that people use technology influence their relationship structures and interactions (Hertlein, 2012; Hertlein & Blumer, 2014). Despite the many years in which technology use has impacted relationships in the US, it remains unclear and is often debated whether technology use is improving or harming intimate relationships.

Existing research trends suggest that technology use can be both advantageous and disadvantageous to intimate relationships (Hertlein & Ancheta, 2014; Hertlein & Blumer, 2014; Murray & Campbell, in press). As a result, the CFT framework was

developed to explain the positive and negative influences of technology on intimate relationships, including the changes to intimate relationship structures and processes that result from technology use (Hertlein & Blumer, 2014). Relative to the CFT framework, technology can serve as a communication platform and has transformed initiation, maintenance, and termination processes within intimate relationships (Hertlein & Blumer, 2014).

Collectively, previous researchers have found that technology use can have both desirable and undesirable implications for couples' relationships (Campbell & Murray, in press; Hertlein, 2012; Hertlein & Ancheta; Lanigan, 2009; Murray & Campbell, in press). In fact, the impact of technology use on romantic relationships is multifaceted because partners' technology use can enhance or reduce their romantic relationship intimacy (Campbell & Murray, in press; Hertlein, 2012; Hertlein & Ancheta; Lanigan, 2009; Murray & Campbell, in press), and couples' preexisting relationship dynamics can influence how they use technology in their relationships (Campbell & Murray, in press; Coyne et al., 2011; Dijkstra et al., 2010; Imhof et al., 2007; Papp et al., 2012; Parker & Wampler, 2003; Whitty, 2005). As a result, couples are challenged with negotiating the patterns of technology use within their romantic relationships so that both partners are satisfied.

To date, however, limited information exists regarding the individual and relational characteristics that influence how partners view and use technology in their intimate relationships. Additionally, there is limited available evidence characterizing the impacts of intimacy-enhancing and intimacy-reducing uses of technology on couples'

relationship satisfaction. Therefore, the purpose of this study was to use the CFT framework as a foundation to conceptualize the effects of technology on couples' relationships, in order to (a) identify how individuals view and use technology in relation to intimacy in their romantic relationships and (b) determine the effects of intimacy-enhancing and intimacy-reducing uses of technology on couples' relationship satisfaction.

### **Discussion of Results**

The researcher developed and tested three research questions to explore participants' individual and relational characteristics that influence how they view and use technology and how this affects their relational intimacy. A summary of the research questions and hypotheses and results are presented in this section.

#### **Description of the Sample**

To obtain a large, diverse sample, the researcher recruited participants using both face-to-face and electronic strategies. The final sample included 208 participants. The participants predominantly self-identified as Caucasian, heterosexual, female, married, and educated with at least a Bachelor's degree. The average age of participants was 35.9 years old ( $SD = 11.15$ ), and their average relationship duration was 10.6 years ( $\mu = 127.5$  months;  $SD = 118.7$ ). The sample lacked diversity, and this was identified as a limitation to this study.

Participants completed a demographic questionnaire and four assessments: the Technology Readiness Index (TRI; Parasuraman, 2000), the Primary Communication Inventory (PCI; Locke et al., 1957; Navran, 1967), the Technology and Intimate

Relationships Assessment (TIRA; Campbell & Murray, under review), and the Relationship Assessment Scale (RAS; Hendrick, 1988). Overall, the sample was moderately open to using technology for enhancing relational intimacy and less open to using technology in ways that reduce relational intimacy. Although the sample, overall, seemed satisfied in their relationships, only a small percentage of the sample reported the use of effective communication skills. In fact, the results of this study suggest that individuals who had less effective communication also demonstrated fewer intimacy-enhancing and greater intimacy-reducing impacts from their technology use. Furthermore, the greater intimacy-reducing impacts from technology use also contributed to less satisfying relationships.

### **Preliminary Analyses**

As a preliminary analysis, differences between the participants based on whether they completed the paper-based or electronic version of the survey were examined. Compared to participants who completed the paper-based survey, participants who completed the electronic version of the survey were younger, had shorter-lasting relationships, and reported more effective communication skills. Because the group of participants who completed the paper version of the survey was very small, these differences were not accounted for in the subsequent analyses. In addition, it is not possible to determine the response rates for each method of recruitment, and it is possible that the recruiting methods simply reached different segments of the target population. The differences, however, should be considered in the interpretation of the findings. Most participants completed the survey electronically, and therefore, had to have access

to technology and likely have a greater level of comfort with completing an electronic survey. Therefore, the sample is likely more representative of people who are more technologically-savvy than may be found in the general population.

### **Research Question 1**

Research Question 1 examined whether there were distinct profile groups among participants based on their scores on the measures of TR, couple communication, and the impacts of technology on relational intimacy (i.e., intimacy-enhancing impacts and intimacy-reducing impacts). The primary analyses used to explore this research question were a cluster analysis and a discriminant analysis. The researcher hypothesized that four distinct profile types would emerge from the cluster analysis based on the variables of TR, couple communication, intimacy-enhancing uses of technology, and intimacy-reducing uses of technology.

As predicted, four distinct cluster groups were formed. The clusters were based primarily on the dimensions of couple communication (CC) and technology-mediated intimacy (TMI), which included both intimacy-enhancing and intimacy-reducing impacts of technology. The CC and TMI dimensions accounted for 99% of differences among the clusters. Therefore, in interpreting the meaning of the clusters below, participants' scores on the PCI and TIRA-intimacy-enhancing and TIRA-intimacy reducing assessments are addressed. Relative to other variables, however, TR had a small contribution to the cluster group differences. Therefore, participants' scores on the TRI are not addressed in the interpretation of the clusters that is presented below. For purposes of interpreting the cluster groups, the following labels were ascribed to each



group: Cluster 1 (Secure), Cluster 2 (Pursuer), Cluster 3 (Dismissive), and Cluster 4 (Fearful). See Figure 5.

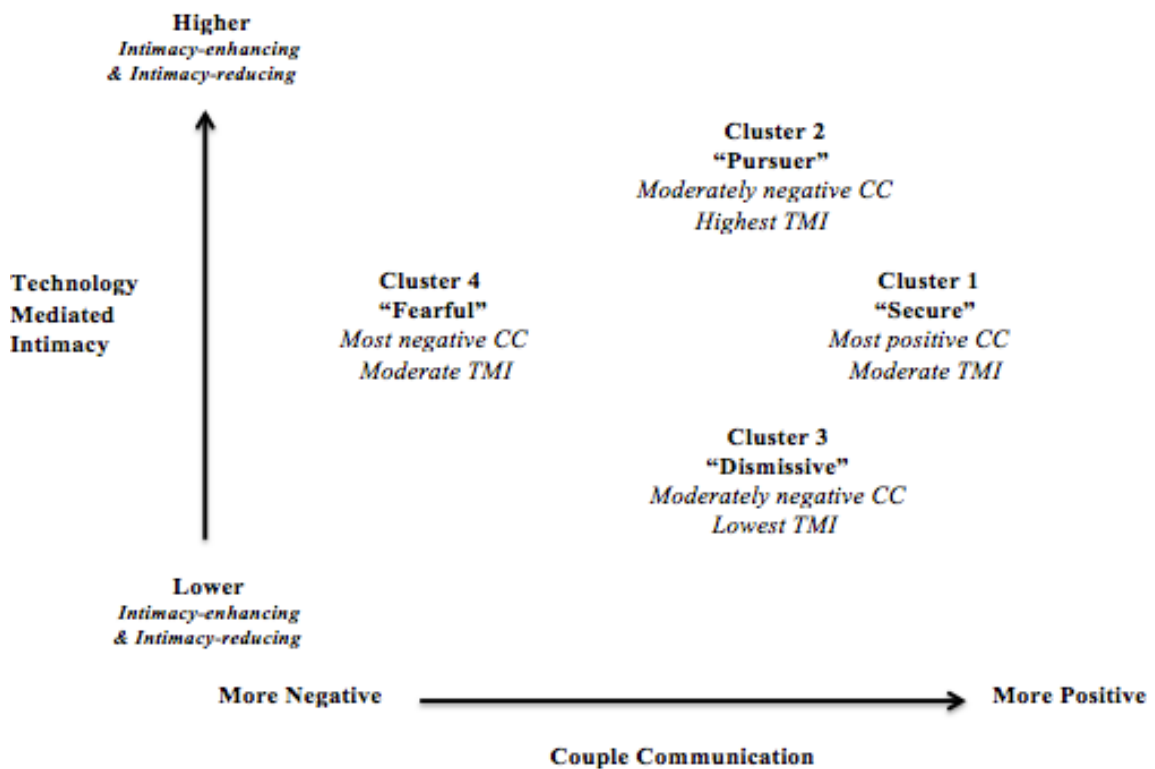


Figure 5. Cluster Groups Based on the Dimensions of Couple Communication (CC) and Technology Mediated Intimacy (TMI).

**Secure.** The Secure cluster demonstrated the highest means on the CC dimension and moderately lower means on the TMI dimension, relative to other groups. The Secure cluster participants were considered to be the strongest group of communicators whose uses of technology had less of an overall impact on their relational intimacy. The results of the cluster analysis suggest that the Secure cluster had more positive communication skills, higher levels of intimacy-enhancing uses of technology, and lower levels of

intimacy-reducing uses of technology. The moderately lower mean scores on the TMI dimension seemed to be a result of combining participants' higher scores on the TIRA intimacy-enhancing subscale and participants' lower scores on the TIRA intimacy-reducing subscale. Thus, both interpretations support that the Secure cluster participants were the strongest communicators who use technology to enhance relational intimacy, but that their overall positive relationship dynamics indicated that their uses of technology have a more moderate impact on their overall relationship functioning.

The results suggest that participants in the Secure cluster were open and willing to use technology in healthy ways that foster intimacy in their romantic relationships. Therefore, consistent with previous research (Perry & Werner-Wilson, 2011), the Secure cluster participants demonstrated positive face-to-face communication patterns that transferred into their technology-facilitated communication. Previous researchers also have found that couples' communication skills can determine the overall quality of their relationships by cultivating affection or creating conflict between partners (Gottman, 1999; Laurenceau et al., 2005; Markman et al., 2010). Couples who have more effective communication skills also are more able to navigate problems that arise in their relationships, are more able to adjust to new relationship dynamics (e.g., technology-mediated communication) (Gottman, 1999; Laurenceau et al., 2005; Markman et al., 2010), and are more satisfied in their relationships (Brashier & Hughes, 2012; Guerrero et al., 2009; Mackey et al., 2004; Osgarby & Halford, 2013; Troy, 2000). Therefore, it is not surprising that the Secure cluster participants demonstrated the strongest communication skills and were the most satisfied in their intimate relationships. As a

result of the combination of more positive communication skills, and higher levels of intimacy-enhancing uses of technology, and lower levels of intimacy-reducing uses of technology, it was presumed that these individuals are emotionally close to, feel safe with, and are more trusting of their partners.

**Pursuer.** The Pursuer cluster demonstrated the highest means on the TMI dimension and moderately lower means on the CC dimension, relative to other groups. The Pursuer cluster participants seemed to be a group of less effective communicators whose uses of technology had greater impacts on their relational intimacy. In fact, the results of the cluster analysis suggest that the Pursuer cluster had greater advantageous and disadvantageous impacts of technology use on their intimate relationships. The higher means on the TMI dimension seem to result from combining participants' higher scores on the TIRA intimacy-enhancing and intimacy-reducing subscales. Thus, the Pursuer cluster participants seemed to use technology as a platform to connect with their partners; however, their efforts to connect with their partners seemed to result in both feelings of connection and disconnection. For example, these individuals may send an affectionate text message to their partner. If their partner does not respond immediately, these individuals may become emotionally triggered, and emotionally flooded with anger and fear. Then, these individuals may behave by pursuing their partner's affection by sending several follow-up text messages. Both sending a simple text message to communicate affection and sending numerous text messages in search of affection, can be categorized as efforts to connect. The former, however, may result in connection, and the latter in disconnection. These results suggest that the Pursuers had a strong desire for

emotional connection with their partner, and anxiously sought out intimacy from their partners, with inconsistent outcomes. Additionally, these individuals are presumed to present in their intimate relationships as more jealous of, dependent on, and hypersensitive to their partners behaviors.

Furthermore, the Pursuer cluster participants reported less positive communication that seemed to transfer into their technology-facilitated communication. These results were consistent with previous research on patterns of communication and technology use (Perry & Werner-Wilson, 2011). Additionally, Pursuer cluster participants were less satisfied in their intimate relationships. These results were consistent with previous researchers who have found statistically significant relationships among couples' communication skills and their overall satisfaction in their relationship (Brashier & Hughes, 2012; Guerrero et. al., 2009; Mackey et al., 2004; Osgarby & Halford, 2013; Troy, 2000). Particularly, more negative communication patterns are indicative of lower relationship satisfaction, and more positive communication patterns are related to higher levels of relationship satisfaction. Therefore, their more negative communication patterns and disadvantageous uses of technology seemed to contribute to the Pursuer cluster's lower levels of relationship satisfaction.

**Dismissive.** Relative to other groups, the Dismissive cluster participants had the lowest means on the TMI dimension and relatively lower means on the CC dimension. The Dismissive cluster participants seemed to be a group of less effective communicators whose uses of technology had minimal impact on their relational intimacy. In fact, these individuals reported that their technology use had less advantageous and less

disadvantageous impacts on their intimate relationship, which could result from their greater levels of disengagement. Therefore, lower means on the TMI dimension seemed to result from the combination of participants' lower scores on the TIRA intimacy-enhancing and intimacy-reducing subscales. As a result of the combination of poorer communication skills, lower levels of intimacy-enhancing and intimacy-reducing uses of technology, it was presumed that these individuals might be uncomfortable being intimate and strive to protect themselves from feeling vulnerable with their partners by avoiding intimate interactions. These individuals may present in their intimate relationships as more independent, detached, and disengaged from their partner. They may also avoid more direct forms of communication.

Consistent with previous research (Perry & Werner-Wilson, 2011), the Dismissive cluster reported more negative (i.e., avoidant and disengaged) communication patterns that seemed to transfer into their technology-facilitated communication. Although the Dismissive cluster included more negative communicators, they reported being more satisfied in their relationships. These results were not consistent with previous researchers who have found significant relationships among less effective communication skills and lower relationship satisfaction (Brashier & Hughes, 2012; Gottman, 1999; Guerrero et. al., 2009; Mackey et al., 2004; Osgarby & Halford, 2013; Troy, 2000). In fact, previous researchers have found that couples with avoidant and disengaged communication styles are less satisfied in their relationships and have a lower prognosis of staying together (Gottman, 1999; Mackey et al., 2004; Osgarby & Halford,

2013). The higher levels of relationship satisfaction could be a reflection of people who feel safer and more content with being disconnected from their partner.

**Fearful.** The Fearful cluster had the lowest means on the CC dimension and moderately lower means on the TMI dimension, relative to other groups. The Fearful cluster appeared to be the worst group of communicators, whose technology use had less of an overall impact on their relational intimacy. The results of the cluster analysis suggest that the Fearful group's uses of technology had fewer advantageous and more disadvantageous impacts on their relational intimacy. Therefore, the moderately lower mean values on the TMI dimension could be the result of combining participants' lower scores on the TIRA intimacy-enhancing subscale and participants' higher scores on the TIRA intimacy-reducing subscale. Overall, the combination of poorest communication skills, lower levels of intimacy-enhancing uses of technology, and highest levels of intimacy-reducing uses of technology appeared to reflect individuals who desire closeness, yet fear being rejected by their partner. As a result, these individuals were presumed to present with a mixture of communication styles, including distancing and contemptuous communication patterns to separate and protect themselves from intimacy, and pursuing communication patterns to obtain attention, support, and emotional closeness from their partner.

In contrast to the Dismissive cluster, the Fearful cluster seemed more open and willing to use technology to seek emotional connection, but in ways that were detrimental to their relationships. The same communication patterns seemed evident in their technology-mediated communication patterns, which is consistent with previous research

findings on face-to-face interactions and technology-mediated interactions (Perry & Werner-Wilson). For example, in their leisure time, the Fearful cluster participants could be mentally, emotionally, or sexually distracted by technology (i.e., checking email, watching TV, researching, engaging in chat rooms, or watching pornography) (Hertlein & Ancheta, 2014), or directly using technology to avoid emotional engagement with their partners (Hertlein & Ancheta, 2014; Murray & Campbell, in press). Both could result in a decrease in intimate connection and relationship satisfaction. In fact, previous researchers have found that couples' communication skills can determine the overall quality of their relationships by cultivating affection or creating conflict between partners (Gottman, 1999; Laurenceau et al., 2005; Markman et al., 2010). Couples who have less effective communication have greater difficulty navigating problems and adjusting to new relationship dynamics (i.e., technology-mediated communication) (Gottman, 1999; Laurenceau et al., 2005; Markman et al., 2010). Therefore, consistent with previous research findings, the Fearful cluster demonstrated the most poor communication skills, relative to other groups, that seemed to transfer into their technology-mediated communication. As a result, this group had the greatest disadvantageous uses of technology in their relationships and was the most unsatisfied in their intimate relationships.

### **Research Questions 2a and 2b**

Research Question 2a examined whether there were significant differences between groups based on age and relationship duration. Similarly, Research Question 2b examined whether there were significant differences between groups based on gender.

**Age.** In the current study, age significantly contributed to differences among cluster groups. Specifically, the Tukey's HSD post hoc analysis revealed that age was significantly different between the Secure and Dismissive clusters ( $p < .01$ ) and the Secure and Fearful clusters ( $p < .05$ ), with Secure participants having a younger age ( $\mu = 33.50$  years) than both the Dismissive ( $\mu = 42.10$  years) and Fearful ( $\mu = 42.06$  years) clusters. Similarly, age was significantly different between the Pursuer and Dismissive clusters ( $p < .01$ ) and the Pursuer and Fearful clusters ( $p < .05$ ). Participants in the Pursuer cluster ( $\mu = 33.83$  years) were, on average, younger as compared to participants in the Dismissive cluster ( $\mu = 42.10$  years) and the Fearful cluster ( $\mu = 42.06$  years). Therefore, Secure cluster participants and Pursuer cluster participants were significantly younger than Dismissive participants and Fearful participants.

In this study, age was found to be significantly different between younger-aged groups of people (i.e., Secure and Pursuer clusters), and older aged groups of people (i.e., Dismissive and Fearful clusters). Although similar in age, the Secure cluster participants were more effective communicators, and the Pursuer cluster participants were less effective communicators. In addition to their uses that may negatively impact their relational intimacy, younger individuals seemed more likely to use technology to enhance relational intimacy. Relative to the groups found in this study, these results could suggest that younger people can have more positive or more negative communication skills and perceive greater positive and negative impacts of technology use on their relational intimacy. In contrast to younger individuals, the older participants (i.e., the Dismissive and Fearful cluster) seemed to have less effective communication skills and greater uses



of technology that were disadvantageous to their relationship, especially for the Fearful cluster. These results suggest that older individuals are less likely to use technology to mediate relational intimacy, less likely to use technology to enhance their relational intimacy, and are more likely to perceive uses of technology to negatively impact their intimate relationship.

Overall, age seemed like a relatively important factor to understand differences among the Secure, Pursuer, Dismissive, and Fearful clusters' communication patterns and uses of technology that positively and negatively impact their relational intimacy. The results of this study partially support previous research findings that suggest younger individual have higher levels of intimacy-enhancing and intimacy-reducing impacts of technology, and older individuals have lower levels of intimacy-enhancing and intimacy-reducing impacts of technology (Campbell & Murray, in press; Coyne et al., 2011). More research, however, is needed to increase consistency of results.

**Relationship duration.** In the current study, relationship duration significantly contributed to differences among cluster groups. In general, the Secure cluster ( $\mu = 109.28$  months; 9.1 years) and the Pursuer cluster ( $\mu = 106.06$  months; 8.8 years) had shorter relationship durations than the total sample mean ( $\mu = 127.5$  months;  $\mu = 10.6$  years old). Although the Pursuer cluster had the lowest mean, their relationships were of a relatively long duration (i.e., almost nine years, on average). In contrast, the Dismissive cluster ( $\mu = 199.82$  months; 16.7 years) and Fearful cluster ( $\mu = 155.13$  months; 12.9 years) had average relationship durations that were longer than the total sample, as well

as higher in comparison to the Secure and Pursuer clusters. The Tukey's HSD post hoc analysis revealed that relationship duration was significantly different only between the Secure cluster and the Dismissive cluster ( $p < .01$ ;  $p = .001$ ), as well as between the Pursuer cluster and the Dismissive cluster ( $p < .01$ ;  $p = .000$ ). No significant differences were observed between other clusters. Overall, these results were consistent with previous researchers who have found that relationship duration is related to couples' uses of technology (Coyne et al., 2011; Dijkstra et al., 2010) and the impacts of their technology use (Campbell & Murray, in press) in intimate relationships.

In this study, relationship duration was found to be significantly different between groups of people who were in relatively newer relationships (i.e., the Secure and Pursuer clusters), and the group of people who were, on average, in the longest-lasting relationships (i.e., the Dismissive cluster). Overall, people who were in longer lasting relationships (i.e., the Dismissive cluster) appeared to have less effective communication skills, as well as less positive and negative impacts of technology use on their relational intimacy. The Secure and Pursuer clusters, however, were in shorter lasting relationships and had greater uses of technology that enhanced relational intimacy. Although these two groups had similar average relationship durations, the Secure cluster participants were more effective communicators, and the Pursuer cluster participants were less effective communicators who also had higher uses of technology that were disadvantageous to their relationships. In summary, people in longer lasting relationships seemed more likely to perceive their uses of technology to negatively impact their relational intimacy, and they might be more distant and disengaged in their intimate

relationships. In contrast, people in newer relationships seemed more engaged with their partners and more likely to use technology to enhance relational intimacy in addition to their uses that negatively impact their relational intimacy.

Overall, these results partially support previous researchers who found that people in newer relationships have higher levels of intimacy-enhancing and intimacy-reducing impacts of technology, and people in longer lasting relationships have lower levels of intimacy-enhancing and intimacy-reducing impacts of technology (Campbell & Murray, in press). The duration of peoples' relationships seemed particularly important for understanding differences between technology use that is advantageous and disadvantageous for relationships. Although significant differences were found between groups based on relationship duration, there is uncertainty associated with the extent to which these differences were solely based on relationship duration, especially given the close connection between age and relationship duration. Thus, future examination of these relationships is necessary to determine the impacts of relationship duration on couple's experiences of relationship communication and technology-mediated intimacy.

**Gender.** Similar to hypothesis 2a, the researcher hypothesized that significant differences among groups would not exist based on gender. The study's sample included 166 female participants (79.8%) and 40 male participants (19.2%). The data analyses revealed significant differences based on gender among the Secure, Pursuer, Dismissive, and Fearful clusters. Specifically, the Secure cluster had the highest percentage of females (92.9%) and the lowest percentage of males (7.1%) compared to other groups. In

contrast, the Fearful cluster had the lowest percentage of females (71.1%) and the highest percentage of males (28.9%).

In past research, men have been found to use technology more often and for more purposes than women (Fallows, 2005; Zickhur & Smith, 2012). Previous researchers, however, have found that men are less likely than women to use technology as a platform for direct communication (Fallows, 2005; Zickhur & Smith, 2012). Previous researchers also have found that in heterosexual relationships, male and female partners respond differently to feelings of relational insecurity and emotional flooding (Kirkpatrick & Davis, 1994; Simpson, 1990). Men typically fall into an avoidant/withdrawal pattern, while women tend to fall into an anxious/pursuer pattern (Kirkpatrick & Davis, 1994; Millwood & Waltz, 2008; Simpson, 1990). Therefore, the smaller number of men in the Secure cluster might be a result of men using technology less to directly communicate with their partners. Another possible explanation could be that men in the Secure cluster use technology more as a platform to do other tasks, or to avoid or disconnect from their partner. Intentional or unintentional avoidance and disconnection could result from feeling emotionally overwhelmed with relationship insecurities. Overall, gender seemed to have a minimal, but significant, influence on differences in how technology impacted participants' relationship intimacy.

### **Research Question 3**

Research question 3 examined the proportion of participants' relationship satisfaction that was explained by their intimacy-enhancing and intimacy-reducing uses of technology. The researcher hypothesized that after controlling for age, relationship

duration, and gender, technology use would predict relationship satisfaction with (a) intimacy-enhancing technology positively related to relationship satisfaction, and (b) intimacy-reducing technology use negatively related to relationship satisfaction. The data analyses confirmed this hypothesis.

Previous researchers have found that the incorporation of technologies into couples' daily routines can positively and negatively impact their relationship dynamics (Hertlein & Blumer, 2014; Hertlein & Ancheta; Murray & Campbell, in press; Papp et al., 2012). Although it is understood that technology use impacts relationship satisfaction, the majority of research on this topic provides only indirect support for this relationship. This means that there appears to be only limited empirical research that directly correlates the impact of technology use on relationship satisfaction.

In the current study, a direct relationship between technology-facilitated intimacy and relationship satisfaction was found. The researcher found that partners' technology use does positively and negatively influence their relationship satisfaction. In fact, partners' technology use accounted for 33% of the variance in couples' relationship satisfaction. Therefore, partners are able to use technology to enhance their relational intimacy. For instance, partners can use technology to emotionally and sexually connect (e.g., sending flirty and affectionate text messages), share leisure and relaxed activities (e.g., watching movie together), and manage their time together (e.g., planning a date night). In contrast, partners also can use technology in ways that may reduce relational intimacy. For instance, partners' use of technology can create emotional and physical distance, such as when technology use distracts partners from spending time with one

another, generates jealousy or distrust between one, or facilitates infidelity. Relative to this study, partners' uses of technology that reduced relational intimacy more heavily influenced their overall relationship satisfaction. Thus, the results of this study provide empirical support for previous research findings that partners' uses of technology can be advantageous and, particularly, disadvantageous to their relationship satisfaction (Coyne et al., 2012; Hertlein & Blumer, 2014; Hertlein & Ancheta; Murray & Campbell, in press; Miller – Ott et al., 2012; Papp et al., 2012).

### **Limitations**

In the current study, several limitations were evident. A first limitation resulted from the limited diversity in the sample. The findings of this study would be most applicable for individuals who are technologically-savvy, female, heterosexual, married, well educated, and in longer-lasting, committed relationship. A second limitation resulted from the convenience and snowball sampling procedures used in the study. The study's total sample size was dependent on the researcher's accessibility to community populations and individuals' willingness to volunteer as a participant. In addition, the final sample could represent a skewed subgroup of individuals based on their relationship to the researcher because some participants were recruited through personal contacts made by the researcher.

Third, the study relied on self-reported data, so participants' responses were based on their perceptions of themselves and their partners, which may not fully reflect their actual behaviors. Self-report data can result in biased data because of peoples' limited insight into their and their partners' behaviors, their biased views of their and their

partners' behaviors, and a tendency to respond in socially desirable ways. A fourth limitation resulted from collecting individual data and not paired (i.e., participant and partner) data. Paired data would allow for comparisons between partners' responses to provide a clearer representation of the intimate relationship dynamics. Additionally, no efforts were made to monitor whether both partners in the same relationship completed the survey, which could result in some relationship dynamics being over-represented in the final sample if two participants were describing the same relationship.

Fifth, the variable TR has been tested within the service and marketing literature, but it has not been studied within the literature on the dynamics of intimate relationships. Therefore, individuals' responses to the TRI items may not accurately convey their openness and willingness toward using new technologies within the dynamics of their intimate relationships. Although individuals' TR is not presumed to alter within the context of their intimate relationships, this is considered a limitation because this is the first time TR was studied within an intimate relationship context. Sixth, the finding that TR did not uniquely contribute to differences among clusters could be a result of higher technology readiness among the sampled population. A seventh limitation resulted from the use of a recently-developed instrument (i.e., the TIRA), with minimal prior psychometric support as one of the primary instruments in the study.

Finally, the researcher used the CFT framework (Hertlein & Blumer, 2014) as a theoretical framework to support that partners' uses of technology influence their intimate relationship processes. To the researcher's knowledge, however, the CFT framework has not been tested empirically to determine whether the theoretical

components hold together and support hypothesized changes in couples' interactions pre-technology integration and post-technology integration. Further, the CFT framework also was not fully tested in the current study. Therefore, a final limitation to this study resulted from using a conceptual framework that has not been studied empirically in prior research.

### **Implications for Counseling**

Technologies have proliferated modern society for decades (Cole et al., 2009). As a result of the increase in accessibility and affordability of technology, people have easier access to technologies (Hertlein & Stevenson, 2010; Hertlein & Blumer, 2014). Additionally, technology has become more accommodating to individual needs, which affords people with more opportunities to use technology for a variety of purposes (i.e., communication, work, and entertainment). Intimate interactions have changed as a result of integrating new technologies into daily interactions. For example, people can use social media and chat rooms to initiate new relationships (Hertlein & Ancheta, 2014; Murray & Campbell, in press; Valentine, 2006), and couples can use video chat, text messaging, and voice calls to facilitate intimacy in long distance relationships (Neustaedter & Greenberg, 2012; Pettigrew, 2009). In addition to technology use impacting relational intimacy, newer technologies provide additional platforms for pre-existing relationship dynamics (i.e., communication patterns, relationship security, and relationship satisfaction) to emerge, and these newer technologies are becoming increasingly integrated into partners' relationship interactions (Coyne et al., 2011; Duran et al., 2011). For example, individuals with more negative communication skills may use



technology as a platform for pursuing their partner's attention or, conversely, to avoid engaging with their partner. At present, couples are finding themselves confronted with navigating individual and relational uses of technology to ensure that both partners are satisfied with their uses of technology within their relationships.

### **Counselor Education**

Technology can be advantageous and disadvantageous to couples' relationships (Hertlein & Ancheta, 2014; Murray & Campbell, in press), which means that counselors must be well informed about its potential impacts (Hertlein & Webster, 2011).

Technology can impact the time and energy couples invest into their relationships, and couples' technology use patterns can be an indicator of their communication skills and commitment to one another. Because technology has become an integral way that couples interact with one another (Cole et al., 2009; Duggan & Brenner, 2013; Rainie, 2010; Smith, 2012), it is necessary for counselors to be well-informed about the different types and uses of technology, as well as the potential impacts of technology on relational intimacy (Hertlein & Webster, 2008). Specifically, counselors will want to learn about key features of technology platforms that provide opportunities for partners to engage in technology use that reduces relational intimacy. For example, the accessibility, affordability, and anonymity features of the Internet provide people access to opportunities to engage in technology-mediated infidelity (emotional or sexual) through the use of adult chat rooms and websites, social media, and email platforms to name a few (Hertlein & Stevenson, 2010; Hertlein & Webster, 2008; Hertlein & Weeks, 2007; Jones & Hertlein, 2012). The easy access to numerous technology platforms also can

distract partners from devoting attention to the relationship, and spending quality time with one another (Hertlein, 2010; Hertlein, 2012; Murray & Campbell, in press). For example, partners can use their smartphones to easily access text messages, voice calls, work email, and the Internet, as well as applications like social media, weather, news, shopping, and sports while they are with their partner. This can leave partners feeling intimately disconnected (Murray & Campbell, in press) and reduce their overall relationship satisfaction. Additionally, some partners may overuse technology or develop a technology use addiction that reduces the emotional, mental, and/or physical time, attention, and intimacy invested into their primary relationship (Hertlein & Weeks, 2007; Jones & Hertlein, 2012). Technology use addictions are relative to the individual, and can include but are not limited to, addictive use of pornography and other adult website, shopping, browsing and researching, or using social media such that use is negatively impairing relational intimacy (Hertlein & Weeks, 2007; Jones & Hertlein, 2012). In contrast, couples can overuse technology platforms to communicate with their partner, sometimes resulting in one partner feeling overly accessible or smothered (Hertlein, 2010), and potentially reducing their desire for intimate connection. Key features of technology also can foster feelings of jealousy and distrust in intimate relationships (Hertlein & Webster, 2008; Sprecher, 2009). For example, anonymity and ambiguity features make it easier for partners to have secret technology-mediated communication, and to hide other technology-based behaviors from their partner (Hertlein & Webster, 2008; Sprecher, 2009). A final example of how technology can impair couples relational intimacy results from technology-mediated miscommunication (Hertlein, 2010; Murray

& Campbell, in press; Perry & Werner-Wilson, 2011). Partners can misinterpret technology-mediated communication due to their relational insecurities combined with the technology features like lack of non-verbal cues such as tone of voice, facial expressions, and context of communication. In addition to counselors being well-informed about different types and uses of technology and the potential impacts of technology on relational intimacy, counselors should possess skills to help couples whose relationships are negatively impacted by their uses of technology. Therefore, many counselors will need to seek training and education to learn more about the impacts of technology on intimate relationships, as it is an underrepresented topic in counselor trainings and workshops (Blumer, Hertlein, Smith, & Allen, 2014).

### **Characteristics of Technology Users**

Clients' individual and relational background characteristics influence how they integrate and use technology in their intimate relationships (Campbell & Murray, in press; Coyne et al., 2011; Dijkstra et al., 2010). In particular, counselors will want to consider their clients' age, relationship duration, and gender, and how each of these can impact how clients use technology in their intimate relationships. An individual's age and relationship duration can influence how open and willing they are to using technology, how they integrate technology into their relationships (Coyne et al., 2011), and how they use technology in ways that are advantageous and disadvantageous to their romantic relationships (Campbell & Murray, in press). Previous researchers have found that younger individuals and those in newer relationships use technology platforms more often to communicate with their partners, although they also may use technology in ways

that are more disadvantageous to their relationships (Campbell & Murray, in press; Coyne et al, 2011). Clients from younger generations may relate to and use technology differently than older generations (McMahon & Pospisil, 2005). For example, clients from younger generations could be using technology more impulsively to initiate and terminate relationships, to intimately invest in other people, and to communicate impulsively about hurt feelings, insecurities, and frustrations with their partners (Coyne et al., 2011). Similarly, people in newer relationships may be more eager to use technologies to connect with their new partners, as compared to individuals who have been in longer-lasting relationships, who may use technology less to connect with their partners. As such, counselors will want to consider the age and the relationship duration of their clients and how these may impact their patterns of technology use that enhance and/or reduce relational intimacy.

Another individual characteristic that may influence peoples' technology use is gender. Although this study demonstrated minimal differences between males and females in their views toward and uses of technology, gender can influence how people communicate in their relationships (Coyne et al., 2013; Dijkstra et al., 2010; Fallows, 2005; Imhof et al., 2007; Papp et. al., 2012; Parker & Wampler, 2003; Whitty, 2005; Zickhur & Smith, 2012). As a result, counselors can discuss with their clients how gender role expectations may be impacting their technology-facilitated communication within the clients' relationships.

The findings of this study highlight the extensive body of research demonstrating the powerful role of couples' communication patterns in determining their intimate

relationship functioning. In this study, couples' communication skills were the single most important factor that distinguished the different clusters of participants. This study's findings suggest that couples with more positive communication patterns will use technology as a platform for effectively engaging with their partners, as well as using technology as a platform to increase connection and intimacy. In contrast, couples who have more negative communication patterns overall are likely to use technology as a platform for ineffectively engaging with their partner, which ultimately can reduce their relational intimacy. Therefore, counselors can assess and identify problematic uses of technology within the context of couples' communication and behavioral interaction patterns. Some indicators of negative communication include what John Gottman (1999) referred to as "The Four Horsemen": criticism, contempt, defensiveness, and stonewalling (Gottman, 1999). Other indicators of negative communication include a pursue/withdraw cycle of interaction (Guerrero & Jones, 2005; Johnson, 2004; Millwood & Waltz, 2008). Counselors can help their clients to develop more positive communication patterns in their relationships through education and skills training (Gottman, 1999), and through modeling effective communication skills, empathizing and validating their distress, and tracking their implicit cycle to make it explicit in session (Johnson, 2004; Johnson, 2011).

### **Assessment Tools**

Next, counselors can use the four cluster groups (i.e., Secure, Pursuer, Dismissive, and Fearful groups) as a tool to conceptualize the positive and negative impacts of couple communication and technology use on couples' relationship satisfaction. Similarly, the

four clusters can be used as a tool to help couples identify and discuss their problematic and positive uses of technology. For example, couples can use the cluster groups to identify their individual and relational insecurities (i.e., fear of abandonment, inadequacy, and worthiness) and communication patterns that influence their technology use behaviors. Additionally, counselors can use the four cluster groups to address other relational issues like “competing attachments” (Johnson, 2004). For example, do partners turn toward one another or do partners turn toward technology when distressed? Do individuals get jealous over the amount of time their partner spends using technology during leisure time?

Unfortunately, a single instrument used to assess and categorize the impacts of couples technology use on their relationship does not exist. Counselors, however, can use similar or the same instruments that the researcher used in this study to assess for more positive and more negative communication (PCI), higher and lower intimacy-enhancing and intimacy-reducing uses of technology (TIRA), and relationship satisfaction (RAS). There are several empirically supported instruments that assess for the strength of couples’ communication and relationship satisfaction, including the Dyadic Adjustment Scale (Spanier 1976), the Marital Adjustment Scale (Locke & Wallace, 1959), the Communication Patterns Questionnaire (Christensen & Heavey, 1990), and the Experiences in Close Relationships scale (Fraley & Shaver, 2000). There is only one known instrument, however, to assess for the impacts of technology use on relational intimacy: the TIRA (Campbell & Murray, in press). Counselors can combine appropriate standardized instruments with open-ended questions to gain a complete

assessment of couples' overall relationship functioning and the impacts of technology on their current presenting concerns in counseling.

### **Addiction and Infidelity**

Counselors will want to assess for technology use addictions and/or infidelity issues. To assess for more severe problematic uses and impacts of technology on relational intimacy, counselors will want to ask more specific questions directed at the types of technology used, the purpose of use, the frequency of use, and the duration of use. Specific questions about frequency, duration, and intensity can help counselors and clients understand if a partner is suffering from a behavioral addiction (e.g., Internet addiction and Internet sex addiction) or engaging in Internet infidelity (Hertlein & Weeks, 2007; Jones & Hertlein, 2012). Also, counselors will want to be aware of other technology devices (e.g., smartphones) that partners can use to engage in infidelity and/or addictive behaviors. The four cluster groups can be used to help conceptualize people's addictive technology behaviors and technology-mediated infidelity. For example, a Pursuer may seek affection from a person outside of the primary relationship because of their fear of being abandoned by their partner. In contrast, a Dismissive partner may seek affection from a person outside of the primary relationship for fear of not being enough (inadequate) for their partner. Although both behaviors are fear-based, the four clusters will provide information about the underlying characteristics that motivate specific technology use patterns.

Counselors will want to take steps to differentiate between technology behaviors motivated by addiction and emotional fear. There are four factors found to differentiate

between technology use addictions and technology-mediated infidelities: (a) Involved Parties (e.g., individual or relational activity), (b) View of Problem (e.g., characterized by amount of time spent on activity, content of activity, and secrecy from partner), (c) Physical Symptoms (e.g., evidence of tolerance and withdrawal symptoms), and (d) Presence/Absence of Addictive Properties (e.g., accessibility, speed, potency, relationship connection and sexual arousal). Please refer to Jones and Hertlein (2008) for more information about differentiating between addictive versus infidelity patterns of technology use.

### **Other Interventions**

There are several interventions that counselors can consider using with couples who demonstrate more extensive uses of technology that result in more negative impacts on their relational intimacy. Due to the ambiguous features of technology and the lack of physical contact, counselors will want to facilitate a discussion on what each partner identifies as inappropriate uses of technology, because partners tend to have varying definitions of what is considered inappropriate (Hertlein & Webster, 2008; Parker & Wampler, 2003). For example, partners may disagree on whether or not spending time and investing emotionally in an extra-dyadic relationship is unfaithful if it is not physical. Therefore, it can be extremely beneficial for couples to have clear definitions of what inappropriate technology use means to one another (Hertlein & Webster, 2008).

Another intervention that counselors can incorporate to minimize destructive patterns of technology use is to establish specific goals and identify specific boundaries and rules for using technology (Young et al., 2000). Counselors can help couples



develop goals specific to potentially destructive patterns of technology use. For example, a couple may identify that problematic technology behaviors occur when one partner checks work emails in their shared leisure time. The couple's goal could be to enhance their intimate connection during non-work leisure time, and then with the counselor they could create a rule to decrease the problematic use interfering with their connection (e.g., no checking work email after 5 pm). Another example could be a couple in which one partner's addiction to Internet pornography is negatively impacting their relationship. The couple's goal could be to enhance their relational intimacy, and then with the counselor they could create a rule to decrease or eliminate pornography consumption.

Counselors can help couples identify positive uses of technology and create a specific plan about how to integrate technology for the benefit of their relationships (Hertlein, 2008; 2011). For instance, counselors can help couples identify the best uses of technology to facilitate affectionate communication (e.g., email, text messaging), and then help partners compose affectionate messages. Also, counselors can assign couples positive technology use homework. For example, couples could be assigned to use the Internet to find relationship-enhancing materials or to plan a weekend getaway trip.

### **Relationship Repair**

Technology use that is perceived to be, or actually is, a violation of trust (i.e., technology-mediated betrayal) can damage relationship bonds (Hertlein & Weeks, 2007). Specific features of technology, such as accessibility, anonymity, and ambiguity, can contribute to unfaithful behaviors (Hertlein & Stevenson; Hertlein & Webster, 2008). The focus of treatment for couples who have experienced technology-mediated betrayal

will be repairing the attachment bond. Therefore, counselors can facilitate a therapeutic process that supports a repair of the relationship.

To repair a relationship bond, individuals must redevelop feelings of safety and security with their partners (Johnson, 2004; Johnson, 2011; Johnson, Makinen, & Millikin, 2001; Makinen & Ediger, 2011). Before counselors begin working with infidelity cases, they need to assess each partner's commitment level to the relationship. Partners who lack a genuine commitment to the relationship will counter therapeutic attempts to increase safety and security in the relationship. If both partners are committed, the counselor then can facilitate ongoing discussions about the experiences of each partner. For example, the counselor could explore the experience of the involved partner including their perceived disconnections within their primary relationship and their motivations behind the affair, followed by discussions about the experiences of the uninvolved partner including their feelings associated with being betrayed (Hertlein, 2004). Counselors will want to validate the experiences of both partners to de-escalate blaming, shaming, and defensive communication, as well as to increase empathic listening and nonjudgmental language (Johnson, 2004; Young et al., 2000). As a result, couples' communication skills should begin to improve. Rebuilding trust and initiating forgiveness between partners is crucial and will be contingent on the involved individual's acknowledgment of their partner's pain. Counselors will want to continue tracking couples' emotional and behavioral patterns and incorporating new information to increase the depths of each partner's emotional experiences.

## **Summary**

Overall, the results of this study can help counselors identify (a) individual and relational characteristics influencing partners' patterns of technology use, (b) patterns of technology use that positively and negatively impact relationship intimacy, and (c) interventions that help enhance couples' relationship satisfaction by decreasing their negative uses and increasing their positive uses of technology. The researcher suggested some tools for counselors to use with couples whose uses of technology negatively impact their relationship satisfaction. By addressing the impacts of technology use on relationship satisfaction, counselors can help to validate and de-escalate both partners and illuminate partners' negative patterns of interactions, including their pre-existing relationship dynamics (i.e., communication patterns and relationship insecurities) that contributed to their negative uses of technology.

## **Future Research**

There are several possible future directions for research that can continue to build upon the findings of the current study. To the researcher's knowledge, the current study was the first to identify cluster groups of people based on the intersections among technology readiness, couple communication, and the positive and negative impacts of technology on relationship intimacy. Additional research is needed to examine dyadic data. By collecting dyadic data from partnered couples, researchers could draw comparisons between partners' perspectives about their communication and uses of technology that positively and negatively impact their relationships. Questions of interest include the following: (a) Do different patterns of communication and technology use

create conflict?; (b) Do discrepancies between couple's reports on what technology behaviors benefit and hinder their relationship emerge?; and (c) How do differences impact their relationship satisfaction?

In addition to assessing for similarities and differences in coupled data, more research is needed to examine other pre-existing relational dynamics, such as partners' attachment styles. Couples' patterns of interaction, including both verbal and nonverbal communication, are indicative of their pre-existing attachment styles (Bartholomew & Horowitz, 1991; Guerrero, 1996; Guerrero & Jones, 2005; Hazan & Shaver, 1987; Millwood & Waltz, 2008). In addition to providing insight about partners' patterns of communication, attachment styles also inform counselors about individuals' working models (i.e., their views of self and views of other in relation to the world), including their action tendencies, perceptions and meaning-making processes, and emotion regulation (Collins 1996; Johnson, 2011). Therefore, research is needed to examine how individuals' attachment styles are aligned with the profile groups found in this study (i.e., the Secure, Pursuer, Dismissive, and Fearful clusters) to provide support for partners' unmet attachment needs that underlie their patterns of technology use that positively and negatively impact their relationships.

Relationship satisfaction is another pre-existing relationship dynamic to be examined in future research. The results of this study found that individuals' use of technology significantly contributed to their overall relationship satisfaction. In the future, researchers examine differences among the four identified cluster groups based on relationship satisfaction. Researchers also can examine the impacts that other

relationship dynamics (i.e., couple communication and attachment styles) have on peoples' uses of technology that enhance and reduce their relational intimacy.

Additional research could include examining changes in partners' uses and the impacts of technology on relational intimacy over time. Technology advancements and relationships are constantly evolving. Therefore, conducting a longitudinal study with the same couples could provide support for changes in couples' patterns of technology use and the impacts of their use on their relationships, relative to their age and relationship duration. Additional factors to examine in longitudinal research include how couples change over time in their communication patterns and attachment styles, and how those changes impact the functions that technology plays in their relationships. In addition, future researchers can examine changes over time in the impacts of technology on relationships between clinical and community-based samples.

Another research implication to consider is examining the relationships among individual and relational background characteristics that influence peoples' TR, communication, and impacts of technology on relational intimacy. As previously indicated, researchers have found that personal (i.e., age and gender) and relational (i.e., relationship duration and satisfaction) background characteristics may affect the intersections of technology use and relationship functioning (Coyne et al., 2011; Coyne et al., 2012; Dijkstra et al., 2010; Fallows, 2005; Imhof et al., 2007; Papp et al., 2012; Murray & Campbell, in press; Parker & Wampler, 2003; Whitty, 2005; Zickhur & Smith, 2012). Therefore, gaining a greater understanding of the influence of age, gender, and relationship duration as it relates to partners' views of technology, communication skills,

and technology use behaviors that enhance or hinder couples' intimacy is an important area for future research.

Also, qualitative research is needed to examine how people understand and describe their patterns of technology use (i.e., amount of time, frequency, and motivations) and the impacts of this use on their relational intimacy. In-depth interview questions would afford people the opportunity to express how they perceive their uses and their partner's uses of technology to be advantageous or disadvantageous to their relationships. Qualitative data also would provide the opportunity for researchers to learn more about specific examples of the ways that couples use technology to foster intimacy in their relationships, as well as to identify technology-related concerns that are viewed as especially problematic in the context of couple relationships.

Future studies should account for the impact of social desirability. Features of technology, such as the anonymity of identities, allow people to portray themselves as available even when they are in monogamous intimate relationships (Hertlein & Stevenson, 2010). People who are in committed, monogamous intimate relationships and yet engage in socially undesirable behaviors (e.g., watching pornography or engaging in infidelity) may not be honest with their responses to the questions about infidelity and addictive behaviors that were evaluated in this study. Therefore, incorporating an assessment tool to test for socially desirable responses could account for discrepancies between actual behaviors and reported behaviors.

The current study was the first known examination of TR within the context of relationships. TR, relative to other variables in this study, minimally contributed to

differences among the identified clusters. As previously mentioned, the lack of differences could be a result of a more technologically ready sample. Therefore, additional research is needed to determine if the minimal importance of TR would be replicated with a more diverse sample. A final research direction will be to focus on validating the four cluster groups found in this study. A classification analysis could be used to test for similar future groups based on the variables of couple communication, intimacy-enhancing uses of technology, and intimacy-reducing uses of technology. The classification analysis could be used to develop more clear guidelines for assigning people to one of the four groups.

### **Conclusion**

The purpose of this study was to identify whether there are distinguishable groups of people based on their levels of technology readiness, couple communication, and perceived positive and negative impacts of technology on their relationships. The cluster analysis revealed four distinct cluster groups. The findings from this study suggest that couple communication was the most important characteristic that contributed to group assignment, and technology-mediated communication also uniquely contributed to group assignment. This final chapter provided a summary of these findings, as well as their implications for counseling, counselor preparation, and future research. Despite its limitations, the findings of this study offer insights into the ways that technology can both enhance and reduce intimacy within couple relationships. As technology use continues to proliferate the personal and professional lives of people in modern society, future research can continue to build upon the current study to continue to ensure that

counselors are prepared to help their clients successfully navigate the many and varied impacts of technology on their lives and relationships.



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## APPENDIX A

### IRB APPROVAL

#### Pilot Study



Emily Campbell <eccampb2@uncg.edu>

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#### IRB Notice

1 message

**IRB** <ori@uncg.edu>  
**To:** eccampb2@uncg.edu  
**Cc:** cifarrio@uncg.edu, cemurray@uncg.edu

Tue, Apr 22, 2014 at 8:18 AM

**To:** Emily Campbell  
Counsel and Ed Development

**From:** UNCG IRB

**Date:** 4/22/2014

**RE:** Determination that Research or Research-Like Activity does not require IRB Approval  
**Study #:** 14-0142  
**Study Title:** TECHNOLOGY, COMMUNICATION, COUPLES' INTIMACY: A PILOT STUDY OF TECHNOLOGY USE BEHAVIOR AND INTIMATE RELATIONSHIPS

This submission was reviewed by the above-referenced IRB. The IRB has determined that this submission does not constitute human subjects research as defined under federal regulations [45 CFR 46.102 (d or f)] and does not require IRB approval.

**Study Description:**

The purpose of the pilot study will be to obtain feedback on the methodology prior to administering the full research study. The three goals of the pilot study will be to gain feedback on a) the differences between the electronic survey and hard copy survey, b) time estimates for completing survey, and c) the format of survey and clarity of items. As a result of administering a pilot study, necessary modifications will be revealed and addressed in the full study. To be included in the study, individuals must self-identify as being a) at least 18 years of age and b) in a monogamous intimate relationship for a minimum of 2 years.

If your study protocol changes in such a way that this determination will no longer apply, you should contact the above IRB before making the changes.

**CC:**  
Christine Murray, Counsel and Ed Development

## Full Study



THE UNIVERSITY of NORTH CAROLINA  
**GREENSBORO**

OFFICE OF RESEARCH INTEGRITY  
2718 Beverly Cooper Moore and Irene Mitchell Moore  
Humanities and Research Administration Bldg.  
PO Box 26170  
Greensboro, NC 27402-6170  
336.256.0253  
Web site: [www.uncg.edu/ori](http://www.uncg.edu/ori)  
Federalwide Assurance (FWA) #216

**To:** Emily Campbell  
Counsel and Ed Development

**From:** UNCG IRB

**Date:** 10/28/2014

**RE:** Notice of IRB Exemption

**Exemption Category:** 2.Survey, interview, public observation

**Study #:** 14-0361

**Study Title:** Technology, Communication, Couples' Intimacy: A Study of Technology Use Behavior and Intimate Relationships

This submission has been reviewed by the IRB and was determined to be exempt from further review according to the regulatory category cited above under 45 CFR 46.101(b).

### **Study Description:**

The aim of this study will be to identify individual and relational characteristics that influence how people view and use technology and how this impacts couples' relationship intimacy and relationship satisfaction. To be included in the study, individuals must self-identify as being (a) at least 18 years of age and (b) in a monogamous intimate relationship for a minimum of 1 year. Results will help counselors conceptualize peoples' individual and relational characteristics that influence their patterns of technology use, and the impact peoples' technology use has on their relationship intimacy and relationship satisfaction. Results also will contribute to counselors toward develop skill based interventions to help improve couples' interpersonal communication.

### **Regulatory and other findings:**

- This research meets criteria for waiver of a signed consent form according to 45 CFR 46.117(c)(2).

### **Investigator's Responsibilities**

Please be aware that any changes to your protocol must be reviewed by the IRB prior to being implemented. Please utilize the most recent and approved version of your consent form/information sheet when enrolling participants. The IRB will maintain records for this study for three years from the date of the original determination of exempt status.

Signed letters, along with stamped copies of consent forms and other recruitment materials will be scanned to you in a separate email. **Stamped consent forms must be used unless the IRB has given you approval to waive this requirement.** Please notify the ORI office immediately if you

page 1 of 2



have an issue with the stamped consents forms.

Please be aware that valid human subjects training and signed statements of confidentiality for all members of research team need to be kept on file with the lead investigator. Please note that you will also need to remain in compliance with the university "Access To and Retention of Research Data" Policy which can be found at [http://policy.uncg.edu/research\\_data/](http://policy.uncg.edu/research_data/).

CC:

Christine Murray, Counsel and Ed Development

## APPENDIX B

### RECRUITMENT MATERIALS FOR PILOT STUDY

#### **Email to Classroom Instructors for Recruitment of Potential Participants**

Subject: Invitation to participant in a research pilot study about communication, technology use, and intimate relationships.

Dear *name of instructor*,

My name is Emily Campbell and I am a doctoral student in the Counselor Education Department at The University of North Carolina at Greensboro. This email is being sent to you because you are a CED doctoral student course instructor. The purpose of this email is to ask you to send an email about my pilot study to your students in hopes that some of your students will be willing to participate in my IRB approved research pilot study, which will help me obtain feedback on the methodology of my study prior to administering the full research study. The content of survey questions include questions related to demographic information, as well as questions about communication with partner, technology use, and intimate relationships. To be eligible to take part in this study your students must be at least 18 year of age and currently be in a monogamous intimate relationship for at least 2 years. If they meet the inclusion criteria and choose to participate in this study, their participation in this study is completely voluntary. Each student will have the opportunity to sign up for a **\$10 Target e-gift card** drawing, too.

This study consists of a demographic questionnaire and 4 surveys for a total of 112 questions to answer.

If you approve sending information about my study to your students, please respond “YES” to this email and I will send you the email I would like for you to forward to your class.

Thank you in advance for your time and consideration!

Emily C. Campbell, MEd., EdS., NCC., LPCA  
Doctoral Student  
Department of Counseling & Educational Development  
The University of North Carolina at Greensboro

### **Follow-up to Initial Email to Potential Participants – Electronic Version**

Subject: Invitation to participant in a research pilot study about communication, technology use, and intimate relationships.

Dear Potential Participants,

Thank you for your interest in this study about communication, technology use, and intimate relationships! To be eligible to take part in this study you must be at least 18 year of age and currently be in a monogamous intimate relationship for at least 2 years. If you meet the inclusion criteria and choose to participate in this study, your participation in this study is completely voluntary. Please copy and paste the link below into your web browser and complete the entire survey. Once you have completed all survey items, you will have the opportunity to sign up for a **\$10 Target e-gift card drawing**.

[https://uncg.qualtrics.com/SE/?SID=SV\\_enA4AQwjdZI6zAN](https://uncg.qualtrics.com/SE/?SID=SV_enA4AQwjdZI6zAN)

If you have any further questions about the study or survey, please let me know!

Again, thank you for your interest in this study and volunteered time!

Emily C. Campbell, MEd., EdS., NCC., LPCA  
Doctoral Student  
Department of Counseling & Educational Development  
The University of North Carolina at Greensboro  
[eccampb2@uncg.edu](mailto:eccampb2@uncg.edu)

**Follow-up to Initial Email to Potential Participants – Hard copy version**

Subject: Invitation to participant in a research pilot study about communication, technology use, and intimate relationships.

Dear Potential Participants,

Thank you for your interest in this study about communication, technology use, and intimate relationships! To be eligible to take part in this study you must be at least 18 year of age and currently be in a monogamous intimate relationship for at least 2 years. If you meet the inclusion criteria and choose to participate in this study, your participation in this study is completely voluntary. Please include a few days and times that you are available to meet for 25 minutes to complete the survey. Once you have completed all survey items, you will have the opportunity to sign up for a **\$10 Target e-gift card drawing**.

If you have any further questions about the study or survey, please let me know!

Again, thank you for your interest in this study and your volunteered time!

Emily C. Campbell, MEd., EdS., NCC., LPCA  
Doctoral Student  
Department of Counseling & Educational Development  
The University of North Carolina at Greensboro  
[eccampb2@uncg.edu](mailto:eccampb2@uncg.edu)

## APPENDIX C

### RECRUITMENT MATERIALS FOR FULL STUDY

#### **Email or Listserv Recruitment**

Subject: Invitation to participant in research study about technology use and couple relationships

Dear Potential Participant,

My name is Emily Campbell and I am a doctoral student in the Counselor Education Department at The University of North Carolina at Greensboro. This email is being sent to invite you to participate in an IRB approved research study that will help us learn more about how people view and use technologies and the impact this has on intimate relationships. To be eligible to take part in this study you must be at least 18 year of age and currently be in a monogamous intimate relationship for at least 1 year. If you meet the inclusion criteria and choose to participate in this study, your participation in this study is completely voluntary.

This study consists of a survey that includes a demographic questionnaire and 4 assessments. The survey is estimated to take 20-25 minutes to complete. Participants who fully complete the survey (i.e., answering every question) will have the opportunity to sign up for a gift card drawing for 1 of 20 \$10 e-gift cards to Target.

If you are interested in participating in this study, please copy and past the survey link below into your web browser.

[https://uncg.qualtrics.com/SE/?SID=SV\\_cIwAHowugIBKeb3](https://uncg.qualtrics.com/SE/?SID=SV_cIwAHowugIBKeb3)

Also, please forward this email to any individual you know that may be eligible to and interested in participating. This will help me obtain a larger sample for my study!

Thank you in advance for your time and consideration!

Emily C. Campbell, MEd., EdS., NCC., LPCA  
Doctoral Student  
Department of Counseling & Educational Development  
The University of North Carolina at Greensboro

## Flyer Recruitment



### Invitation to participate in a study about technology use and couple relationships

**Purpose of the study:** to determine how people view and use technologies and how this impacts relational intimacy and relationship satisfaction.

**Who my study targets?**

- 18 year of age or older
- Individuals in monogamous intimate relationships for 1 or more years

**What is the estimated time to complete surveys?** 20 -25 minutes

**Is there compensation?** If you fully complete the survey, you can enter into a gift card drawing for 1 of 20 \$10 e-gift cards.



**What will I be asked to do?**

- Complete a survey that includes:
  - Demographic questionnaire
  - Technology readiness assessment
  - Communication assessment
  - Technology use and intimacy assessment
  - Relationship satisfaction assessment



**HOW TO PARTICIPATE?**

1. Tear off a tab and type in web address (no spaces) into your web browser – this will take to another link
2. Copy and past the web address link into your web browser and complete the survey!

**Thank you** in advance for your time and consideration!

If you have any questions, please email Emily at [eccampb2@uncg.edu](mailto:eccampb2@uncg.edu) affiliated with - The University of North Carolina at Greensboro

completechstudy.word press.com	completechstudy.word press.com	completechstudy.word press.com	completechstudy.wordpr ess.com	completechstudy.word press.com	completechstudy.word press.com	completechstudy.word press.com	completechstudy.word press.com	completechstudy.word press.com	completechstudy.word press.com	completechstudy.word press.com
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## **Social Media Recruitment**

### **Invitation to participate in a research study about technology use and couple relationships**

**Purpose:** to determine how people view and use technologies and how this impacts relational intimacy and relationship satisfaction.

**Target Population?**

- 18 year of age or older
- Individuals in monogamous intimate relationships for 1 or more years

**Estimated time?** 20 -25 minutes

**Compensation?** If you fully complete the survey, you can enter into a gift card drawing for 1 of 20 \$10 e-gift cards.

**What will I be asked to do:**

Complete a survey that includes: A demographic questionnaire, and 4 assessments: (1) Technology readiness, (2) Communication, (3) Technology use and intimacy, and (4) Relationship satisfaction assessment

Please copy and paste the link below into your web browser:

[https://uncg.qualtrics.com/SE/?SID=SV\\_8j3i2e29hO3bC1n](https://uncg.qualtrics.com/SE/?SID=SV_8j3i2e29hO3bC1n)

After you have fully completed the survey, **please share my post with others**. If you have any questions, please contact me at [eccampb2@uncg.edu](mailto:eccampb2@uncg.edu) affiliated with - The University of North Carolina at Greensboro. Thank you for your time and consideration!

## **In-Person Recruitment Script**

Hello! My name is Emily and I am a doctoral student in the Counselor Education Department at The University of North Carolina at Greensboro. I am working on my dissertation study on technology use and couples' relationships. This study will help us learn more about how people view and use technologies and the impact this has on intimate relationships.

To be eligible to participate in this study, you must be at least 18 year of age and currently be in a monogamous intimate relationship for at least 1 year.

The survey includes a consent form, a demographic questionnaire, and 4 assessments. It will take about 20-25 minutes to complete the entire survey. Your participation in this study is completely voluntary. I am wondering if you would be willing to participate?

If yes, once you fully complete the survey, you will have an option to enter a gift card drawing.

Any questions?



APPENDIX D  
INFORMED CONSENT

**Pilot Study**

**University of North Carolina at Greensboro  
Consent to Act as a Human Participant: Long Form**

**Project Title:** TECHNOLOGY, COMMUNICATION, COUPLES' INTIMACY: A STUDY OF TECHNOLOGY USE BEHAVIOR AND INTIMATE RELATIONSHIPS

**Project Director:** Dr. Christine Murray  
**Doctoral Student:** Emily Campbell

**What is this study about?**

The purpose of this study is to explore how you view and use technology and how this impacts your intimate relationship.

**Why are you asking me?**

We are asking you to participate in this study because you are (a) at least 18 years of age and (b) are currently involved in a monogamous intimate relationship for at least 1 year. For purposes of this study, *a monogamous intimate relationship is defined as an exclusive relationship, in which two individuals share an emotional, romantic and/or sexual connection, and both individuals agree that neither partner will share a similar relationship with another person.*

**What will you ask me to do if I agree to be in the study?**

We are asking you to take a survey that takes approximately 20-25 minutes to complete. After you complete these questions, you are finished with the study. In general, the questions will ask about demographic information and experiences related to technology and relational intimacy.

**What are the dangers to me?**

The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risk to participants. Minimal risks may include emotional discomfort when answering questions about your technology behaviors and your intimate relationship.

If you have any concerns or complaints about this research project, benefits, or risks associated with being a participant in this study, please contact the Office of Research Compliance at UNCG toll-free at (855)-251-2351. If you have questions, want more information or have suggestions, please contact Dr. Christine Murray who may be reached at (336) 334-3426 or via email at [cemurray@uncg.edu](mailto:cemurray@uncg.edu). You may also contact Emily Campbell who may be reached via email at [eccampb2@uncg.edu](mailto:eccampb2@uncg.edu)

**Are there any benefits to society as a result of me taking part in this research?**

This current study will investigate how people view and use technology in relation to intimacy in their romantic relationships. By participating in this study, you may be contributing to creating new knowledge related to human investment in technology and how this may affect intimate relationships.

**Are there any benefits to me for taking part of this research study?**

There will be no direct benefits for participants in this study. Indirect benefits may include the opportunity to reflect on their relationship and intimacy with romantic partner and technology use. We hope that this reflection may lead to a deeper awareness of yourself and your relationship.

**Will I get paid for being in the study? Will it cost me anything?**

Participating in this study will not cost you anything except the time it takes to complete assessments. You will not be compensated for your time. All participants who complete the entree survey will have the opportunity to enter a drawing for 1 of 20 \$10 e-gift cards to Target. Once you have completed the survey, you will be prompted to sign up for the gift card drawing. In order to sign up for the drawing you must supply an e-mail address. This is not required to participate in the study, and the way to enter the survey the survey will not link your e-mail address to your individual survey responses.

**How will you keep my information confidential?**

The survey itself is anonymous. We are not collecting identifying personal information (e.g. name, social security number). The information you supply will be kept private. If you are completing a hard copy of the survey, your information will be locked in a storage cabinet that only I will have access to. If you are completing the survey electronically, keep in mind that absolute confidentiality of data provided through the Internet cannot be guaranteed due to the limited protections of Internet access. Please be sure to close your browser when finished so no one will be able to see what you have been doing. All the information from the assessments you complete will be input or linked to a safe database that is password protected. All information obtained in this study is strictly confidential unless the law requires disclosure.

**What if I want to leave the study?**

You have the right to refuse to participate or to withdraw at any time while taking the survey, without penalty. If you do withdraw, it will not affect you in any way. Once you have completed the survey and submitting your answers, you will no longer be able to withdraw your survey answers from the study because your collected data will be in a de-identifiable state.

**What about new information/changes in the study?**

If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

**Voluntary Consent by Participant:**

By completing this survey, I acknowledge that I have read and fully understand the informed consent and match the inclusion criteria - I am 18 years of age or older and are currently involved in a monogamous intimate relationship for at least 1 year or longer- as well as, openly and willingly consent to participate in the study outlined in this consent form. By not completing the survey, I acknowledge that I do not meet inclusion criteria and are not eligible to participate in the study, or do not want to participate in the study.

## **Full Study – Electronic Version**

### **University of North Carolina at Greensboro Consent to Act as a Human Participant: Long Form**

**Project Title:** TECHNOLOGY, COMMUNICATION, COUPLES' INTIMACY: A STUDY OF TECHNOLOGY USE BEHAVIOR AND INTIMATE RELATIONSHIPS

**Project Director:** Dr. Christine Murray

**Doctoral Student:** Emily Campbell

#### **What are some general things you should know about research studies?**

You are being asked to take part in a research study. Your participation in the study is voluntary. You may choose not to join, or you may withdraw your consent to be in the study, for any reason, without penalty.

Research studies are designed to obtain new knowledge. This new information may help people in the future. There may not be any direct benefit to you for being in the research study. There also may be risks to being in research studies. If you choose not to be in the study or leave the study before it is done, it will not affect your relationship with the researcher or the University of North Carolina at Greensboro.

Details about this study are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about being in this research study.

If you have any questions about this study at any time, you should ask the researchers named in this consent form. Their contact information is below.

#### **What is this study about?**

The purpose of this study is to explore how you view and use technology and how this impacts your intimate relationship.

#### **Why are you asking me?**

We are asking you to participate in this study because you are (a) at least 18 years of age and (b) are currently involved in a monogamous intimate relationship for at least 1 year. For purposes of this study, *a monogamous intimate relationship is defined as an exclusive relationship, in which two individuals share an emotional, romantic and/or sexual connection, and both individuals agree that neither partner will share a similar relationship with another person.*

**What will you ask me to do if I agree to be in the study?**

We are asking you to take a survey that takes approximately 20-25 minutes to complete. After you complete these questions, you are finished with the study. In general, the questions will ask about demographic information and experiences related to technology and relational intimacy.

**What are the dangers to me?**

The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risk to participants. Minimal risks may include emotional discomfort when answering questions about your technology behaviors and your intimate relationship. You may choose not to respond to questions that make you feel uncomfortable. You may choose to withdraw from the study without penalty.

If you have any concerns or complaints about this research project, benefits, or risks associated with being a participant in this study, please contact the Office of Research Compliance at UNCG toll-free at (855)-251-2351. If you have questions, want more information or have suggestions, please contact Dr. Christine Murray who may be reached at (336) 334-3426 or via email at [cemurray@uncg.edu](mailto:cemurray@uncg.edu). You may also contact Emily Campbell who may be reached via email at [eccampb2@uncg.edu](mailto:eccampb2@uncg.edu)

**Are there any benefits to society as a result of me taking part in this research?**

This current study will investigate how people view and use technology in relation to intimacy in their romantic relationships. By participating in this study, you may be contributing to creating new knowledge related to human investment in technology and how this may affect intimate relationships.

**Are there any benefits to me for taking part of this research study?**

There will be no direct benefits for participants in this study. Indirect benefits may include the opportunity to reflect on their relationship and intimacy with romantic partner and technology use. We hope that this reflection may lead to a deeper awareness of yourself and your relationship.

**Will I get paid for being in the study? Will it cost me anything?**

Participating in this study will not cost you anything except the time it takes to complete assessments. You will not be compensated for your time. All participants who complete the entire survey will have the opportunity to enter a drawing for 1 of 20 \$10 e-gift cards to Target. Once you have completed the survey, you will be prompted to sign up for the gift card drawing. In order to sign up for the drawing you must supply an e-mail address. This is not required to participate in the study, and the way to enter the survey the survey will not link your e-mail address to your individual survey responses.

**How will you keep my information confidential?**

The survey itself is confidential. We are not collecting identifying personal information (e.g. name, social security number). The information you supply will be kept private. If you are completing a hard copy of the survey, your information will be locked in a storage cabinet that only I will have access to. If you are completing the survey electronically, keep in mind that absolute confidentiality of data provided through the Internet cannot be guaranteed due to the limited protections of Internet access. Please be sure to close your browser when finished so no one will be able to see what you have been doing. All the information from the assessments you complete will be input or linked to a safe database that is password protected. All information obtained in this study is strictly confidential unless the law requires disclosure.

**What if I want to leave the study?**

You have the right to refuse to participate or to withdraw at any time while taking the survey, without penalty. Choosing not to participate in the study or if you choose to withdraw, it will not affect your relationship with the organization from which you were recruited. Once you have completed the survey and submitted your answers, you will no longer be able to withdraw your survey answers from the study because your collected data will be in a de-identifiable state.

**What about new information/changes in the study?**

If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

**Voluntary Consent by Participant:**

By checking the box below you are agreeing that you read and fully understand the contents of this document and are openly and willingly consenting to take part in this study. Additionally, you are confirming that all of your questions concerning this study have been answered. By checking a box below, you are either 1) checking the box "I agree" indicating that you are 18 years of age or older and are currently involved in a monogamous intimate relationship for at least 1 year, and are agreeing to participate in the study outlined in this consent form or 2) checking the box "I disagree" indicating that you do not meet inclusion criteria and are not eligible to participate in the study, or 3) you decide that you do not want to participate in the study. You will be required to check the box below in order to enter or exit the survey.

## **Full Study – Paper Copy Version**

### **University of North Carolina at Greensboro Consent to Act as a Human Participant: Long Form**

**Project Title:** TECHNOLOGY, COMMUNICATION, COUPLES' INTIMACY: A STUDY OF TECHNOLOGY USE BEHAVIOR AND INTIMATE RELATIONSHIPS

**Project Director:** Dr. Christine Murray  
**Doctoral Student:** Emily Campbell

#### **What are some general things you should know about research studies?**

You are being asked to take part in a research study. Your participation in the study is voluntary. You may choose not to join, or you may withdraw your consent to be in the study, for any reason, without penalty.

Research studies are designed to obtain new knowledge. This new information may help people in the future. There may not be any direct benefit to you for being in the research study. There also may be risks to being in research studies. If you choose not to be in the study or leave the study before it is done, it will not affect your relationship with the researcher or the University of North Carolina at Greensboro.

Details about this study are discussed in this consent form. It is important that you understand this information so that you can make an informed choice about being in this research study.

If you have any questions about this study at any time, you should ask the researchers named in this consent form. Their contact information is below.

#### **What is this study about?**

The purpose of this study is to explore how you view and use technology and how this impacts your intimate relationship.

#### **Why are you asking me?**

We are asking you to participate in this study because you are (a) at least 18 years of age and (b) are currently involved in a monogamous intimate relationship for at least 1 year. For purposes of this study, *a monogamous intimate relationship is defined as an exclusive relationship, in which two individuals share an emotional, romantic and/or sexual connection, and both individuals agree that neither partner will share a similar relationship with another person.*

**What will you ask me to do if I agree to be in the study?**

We are asking you to take a survey that takes approximately 20-25 minutes to complete. After you complete these questions, you are finished with the study. In general, the questions will ask about demographic information and experiences related to technology and relational intimacy.

**What are the dangers to me?**

The Institutional Review Board at the University of North Carolina at Greensboro has determined that participation in this study poses minimal risk to participants. Minimal risks may include emotional discomfort when answering questions about your technology behaviors and your intimate relationship. You may choose not to respond to questions that make you feel uncomfortable. You may choose to withdraw from the study without penalty.

If you have any concerns or complaints about this research project, benefits, or risks associated with being a participant in this study, please contact the Office of Research Integrity at UNCG toll-free at (855)-251-2351. If you have questions, want more information or have suggestions, please contact Dr. Christine Murray who may be reached at (336) 334-3426 or via email at cemurray@uncg.edu. You may also contact Emily Campbell who may be reached via email at eccampb2@uncg.edu

**Are there any benefits to society as a result of me taking part in this research?**

This current study will investigate how people view and use technology in relation to intimacy in their romantic relationships. By participating in this study, you may be contributing to creating new knowledge related to human investment in technology and how this may affect intimate relationships.

**Are there any benefits to me for taking part of this research study?**

There will be no direct benefits for participants in this study. Indirect benefits may include the opportunity to reflect on their relationship and intimacy with romantic partner and technology use. We hope that this reflection may lead to a deeper awareness of yourself and your relationship.

**Will I get paid for being in the study? Will it cost me anything?**

Participating in this study will not cost you anything except the time it takes to complete assessments. You will not be compensated for your time. All participants who complete the entire survey will have the opportunity to enter a drawing for 1 of 20 \$10 e-gift cards to Target. Once you have completed the survey, you will be prompted to sign up for the gift card drawing. In order to sign up for the drawing you must supply an e-mail address. This is not required to participate in the study, and the way to enter the survey the survey will not link your e-mail address to your individual survey responses.



**How will you keep my information confidential?**

The survey itself is confidential. We are not collecting identifying personal information (e.g. name, social security number). The information you supply will be kept private. If you are completing a hard copy of the survey, your information will be locked in a storage cabinet that only I will have access to. If you are completing the survey electronically, keep in mind that absolute confidentiality of data provided through the Internet cannot be guaranteed due to the limited protections of Internet access. Please be sure to close your browser when finished so no one will be able to see what you have been doing. All the information from the assessments you complete will be input or linked to a safe database that is password protected. All information obtained in this study is strictly confidential unless the law requires disclosure.

**What if I want to leave the study?**

You have the right to refuse to participate or to withdraw at any time while taking the survey, without penalty. Choosing not to participate in the study or if you choose to withdraw, it will not affect your relationship with the organization from which you were recruited. Once you have completed the survey and submitted your answers, you will no longer be able to withdraw your survey answers from the study because your collected data will be in a de-identifiable state.

**What about new information/changes in the study?**

If significant new information relating to the study becomes available which may relate to your willingness to continue to participate, this information will be provided to you.

**Voluntary Consent by Participant:**

By completing this survey, I acknowledge that I have read and fully understand the informed consent, match the inclusion criteria - I am 18 years of age or older and are currently involved in a monogamous intimate relationship for at least 1 year - as well as, openly and willingly consent to participate in the study outlined in this consent form. By not completing the survey, I acknowledge that I do not meet inclusion criteria and are not eligible to participate in the study, or do not want to participate in the study.

## APPENDIX E

### DEMOGRAPHIC QUESTIONNAIRE

#### **TECHNOLOGY, COMMUNICATION, COUPLES' INTIMACY: A STUDY ABOUT TECHNOLOGY USE BEHAVIOR AND INTIMATE RELATIONSHIPS**

Before you start this survey, please note what time it is here: \_\_\_\_\_.

At the end of the survey, you will be asked how much time it took you to complete the survey.

Thank you!

#### **Demographic Questions**

For the purpose of this study, a monogamous intimate relationship is defined as an exclusive relationship between two people, in which both individuals share an emotional and/or sexual romantic connection and both individuals agree that neither partner will share a similar relationship with another person (Adams & Johns, 1997; Moss & Schwebel, 1993).

Please answer the following:

1. Are you currently in a monogamous intimate relationship that has lasted one year or longer?  
  
\_\_\_\_\_ Yes      \_\_\_\_\_ No
2. Are you currently 18 years of age or older?  
  
\_\_\_\_\_ Yes      \_\_\_\_\_ No
3. What is your age in years? \_\_\_\_\_
4. What is your partner's age in years? \_\_\_\_\_
5. What is your relationship status? Please circle the choice that best describes you.
  - a. Dating
  - b. Engaged
  - c. Domestic partnership
  - d. Married
  - e. Other (please identify): \_\_\_\_\_

6. What is your sexual orientation? \_\_\_\_\_
7. What is your gender identity? \_\_\_\_\_
8. What is your partner's gender identity? \_\_\_\_\_
9. What is your ethnic background? Please circle the choice that best describes you.
- a. African American (non Hispanic)
  - b. Asian
  - c. Caucasian American (non Hispanic)
  - d. Latino/Hispanic
  - e. Native American
  - f. Pacific Islander
  - g. Other (please identify): \_\_\_\_\_
10. What is your partner's ethnic background? Please circle the choice that best describes your partner.
- a. African American (non Hispanic)
  - b. Asian
  - c. Caucasian American (non Hispanic)
  - d. Latino/Hispanic
  - e. Native American
  - f. Pacific Islander
  - g. Other (please identify): \_\_\_\_\_
11. What is your highest level of education achieved? Please circle the choice that best describes you.
- a. High School
  - b. Associates degree
  - c. Bachelor degree
  - d. Masters degree
  - e. PhD
  - f. MD
  - g. Other (please specify): \_\_\_\_\_
12. What is your partner's highest level of education achieved? Please circle the choice that best describes your partner.
- a. High School
  - b. Associates degree
  - c. Bachelor degree
  - d. Masters degree
  - e. PhD
  - f. MD
  - g. Other (please specify): \_\_\_\_\_

13. How many **years and months total**, have you and your partner been together? Please, round to the nearest month. For example, 5 years and 3 months.

\_\_\_\_\_ years and \_\_\_\_\_ months.

14. How many **years and months** have you and your partner been married? Please, round to the nearest month. For example, 3 years and 1 month. **PLEASE NOTE** - if this does not apply to you, please type or write NA.

\_\_\_\_\_ years and \_\_\_\_\_ months.

15. Do you and your partner live in the same household? Please check the response that best describes you and your partner.

\_\_\_\_\_ Yes \_\_\_\_\_ No

16. If you do not live in the same household as your partner, approximately how many miles do you or your partner live away from your home? For example, 225 miles. If this question does not apply to you, please write NA.

\_\_\_\_\_ miles

17. On average, what is your **household** annual income?

\$ \_\_\_\_\_

18. Are you and your partner currently engaging in couples counseling? Please check the response that best describes you and your partner.

\_\_\_\_\_ Yes \_\_\_\_\_ No

19. Have you and your partner ever engaged in couples counseling? Please check the response that best describes you and your partner.

\_\_\_\_\_ Yes \_\_\_\_\_ No

20. Have you been married and divorced prior to your current marriage? If yes, please indicate **how many times** you have been married and divorced prior to your current marriage (not including your current marriage).

## Patterns of Technology Use

Please answer the following questions in relation to your patterns of technology use during your **leisure time for non-work-related purposes**. In other words, include only time when you are using technology that **is not** solely related to your work and career routine. Rather, please describe your technology use during your **free time**. Please circle the choice that best describes you.

21. In an average week, how much time do you spend using **technology during your leisure time for non-work-related purposes**? Round to the nearest hour.
- a. 0 hours per week
  - b. < 1 hour per week
  - c. 1-4 hours per week
  - d. 5-8 hours per week
  - e. 9-12 hours per week
  - f. 13-16 hours per week
  - g. 17 + hours per week
22. In an average week, how much time does your partner spend using **technology during their leisure time for non-work-related purposes**? Round to the nearest hour.
- h. 0 hours per week
  - i. < 1 hour per week
  - j. 1-4 hours per week
  - k. 5-8 hours per week
  - l. 9-12 hours per week
  - m. 13-16 hours per week
  - n. 17 + hours per week

Please circle your level of agreement to identify your technology patterns of use **during your leisure time for non-work-related purposes** on an average week.

23. I use technology to interact and connect with my partner.
- a. Strongly Disagree
  - b. Disagree
  - c. Neutral
  - d. Agree
  - e. Strongly Agree

24. I use technology to interact and connect with people other than my partner.

- a. Strongly Disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly Agree

25. I use technology to escape or avoid my partner.

- a. Strongly Disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly Agree

26. I use technology to follow up on work tasks.

- a. Strongly Disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly Agree

27. I use technology for household management tasks.

- a. Strongly Disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly Agree

28. I use technology to stay informed of news and to educate myself.

- a. Strongly Disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly Agree

29. I try not to use technology during my leisure time.

- a. Strongly Disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly Agree

Please place an **X** to identify the number of hours in which you use the following technology device(s) or services during your **leisure time for non-work-related purposes** on an average week. NOTE – you may use multiple technologies and platforms at once. Therefore, the total amount of time you estimate for each technology device/platform does not need to add up to your estimate grand total number of hours of technology use.

30. Computer-Internet: \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12  
\_\_\_\_ 13-16 \_\_\_\_ 17+

- Email: \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+

- Online gaming: \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12  
\_\_\_\_ 13-16 \_\_\_\_ 17+

- Video chat like Skype and Facetime: \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4  
\_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+

- Social Media (e.g., Facebook, Twitter, Pinterest, Instagram): \_\_\_\_ 0 hrs.  
\_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+

- Pornographic websites (individual use): \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4  
\_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+

- Pornographic websites (couple use): \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8  
\_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+

- Dating sites/chat rooms (e.g., Match, Zoosk, E-Harmony, Compatible Partners): \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+

- Adult hook up sites/chat rooms (e.g., Grindr, Blendr, Ashley Madison): \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+

31. Cell-phone/Smartphone/iPhone: \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8  
 \_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+

- Text messages: \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12  
 \_\_\_\_ 13-16 \_\_\_\_ 17+
- Voice phone calls: \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12  
 \_\_\_\_ 13-16 \_\_\_\_ 17+
- Email: \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16  
 \_\_\_\_ 17+
- Video chat like Skype and Facetime: \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8  
 \_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+
- Social Media (e.g., Facebook, Twitter, Pinterest, Instagram): \_\_\_\_ 0 hrs.  
 \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+
- Dating and hook up applications (e.g., Match, E-Harmony and/or Grindr,  
 Tingle): \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16  
 \_\_\_\_ 17+
- Other applications (e.g., News, weather, sports): \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4  
 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+
- Pornographic websites (individual use): \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4  
 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+
- Pornographic websites (couple use): \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8  
 \_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+

32. TV: \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16  
 \_\_\_\_ 17+

- TV shows: \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16  
 \_\_\_\_ 17+
- Movies: \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16  
 \_\_\_\_ 17+
- Pornographic movies (individual use): \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4  
 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+



- Pornographic movies (couple use): \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8  
\_\_\_\_ 9-12 \_\_\_\_ 13-16 \_\_\_\_ 17+

- Games: \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-12 \_\_\_\_ 13-16  
\_\_\_\_ 17+

33. Other technology devices or uses (e.g., iPod, iPad, and tablet or download music, Netflix, and online shopping - please specify)

- \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-  
12 \_\_\_\_ 13-16 \_\_\_\_ 17+

- \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-  
12 \_\_\_\_ 13-16 \_\_\_\_ 17+

- \_\_\_\_ 0 hrs. \_\_\_\_ < 1 \_\_\_\_ 1-4 \_\_\_\_ 5-8 \_\_\_\_ 9-  
12 \_\_\_\_ 13-16 \_\_\_\_ 17+

Please provide short answer responses to the following questions in relation to your patterns of technology use in general.

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34. Which forms of technology do you use the most frequently when communicating with your partner?

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35. Please list the top three ways that you believe that technology BENEFITS your relationship with your partner.

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36. Please list the top three ways that you believe that technology HURTS your relationship with your partner.

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APPENDIX F  
INSTRUMENTATION

**Technology Readiness Index**

*Note: These questions comprise the Technology Readiness Index which is copyrighted by A. Parasuraman and Rockbridge Associates, Inc., 1999.*

RESPONDENT INSTRUCTIONS

Self Administered (mail, web, etc.): The following are some statements about peoples' beliefs about technology. For each one, please indicate whether you "strongly agree," "somewhat agree," are "neutral," "somewhat disagree," or "strongly disagree."

- |   |                   |
|---|-------------------|
| 5 | Strongly Agree    |
| 4 | Somewhat Agree    |
| 3 | Neutral           |
| 2 | Somewhat Disagree |
| 1 | Strongly Disagree |

10 Item Scale

1. You do not consider it safe to do any kind of financial business online.
  - a) Strongly Agree
  - b) Somewhat Agree
  - c) Neutral
  - d) Somewhat Disagree
  - e) Strongly Disagree
  
2. You worry that information you send over the Internet will be seen by other people.
  - a) Strongly Agree
  - b) Somewhat Agree
  - c) Neutral
  - d) Somewhat Disagree
  - e) Strongly Disagree

3. It is embarrassing when you have trouble with a high-tech gadget while people are watching.
  - a) Strongly Agree
  - b) Somewhat Agree
  - c) Neutral
  - d) Somewhat Disagree
  - e) Strongly Disagree
4. You can usually figure out new high-tech products and services without help from others.
  - a) Strongly Agree
  - b) Somewhat Agree
  - c) Neutral
  - d) Somewhat Disagree
  - e) Strongly Disagree
5. You like computer programs that allow you to tailor things to fit your own needs.
  - a) Strongly Agree
  - b) Somewhat Agree
  - c) Neutral
  - d) Somewhat Disagree
  - e) Strongly Disagree
6. You find new technologies to be mentally stimulating.
  - a) Strongly Agree
  - b) Somewhat Agree
  - c) Neutral
  - d) Somewhat Disagree
  - e) Strongly Disagree
7. Other people come to you for advice on new technologies.
  - a) Strongly Agree
  - b) Somewhat Agree
  - c) Neutral
  - d) Somewhat Disagree
  - e) Strongly Disagree

8. If you provide information to a machine or over the Internet, you can never be sure it really gets to the right place.
- a) Strongly Agree
  - b) Somewhat Agree
  - c) Neutral
  - d) Somewhat Disagree
  - e) Strongly Disagree
9. When you get technical support from a provider of a high-tech product or service, you sometimes feel as if you are being taken advantage of by someone who knows more than you do.
- a) Strongly Agree
  - b) Somewhat Agree
  - c) Neutral
  - d) Somewhat Disagree
  - e) Strongly Disagree
10. In general, you are among the first in your circle of friends to acquire new technology when it appears.
- a) Strongly Agree
  - b) Somewhat Agree
  - c) Neutral
  - d) Somewhat Disagree
  - e) Strongly Disagree

## Primary Communication Inventory

Below is a list of items on communication between you and your partner. Using the scale described here, fill in the blank space next to each item with the number which best represents the extent to which you and your partner behave in the specified way.

- 1 = Never
- 2 = Seldom
- 3 = Occasionally
- 4 = Frequently
- 5 = Very Frequently

1. How often do you and your partner talk over pleasant things that happen during the day?
  - a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
2. How often do you and your partner talk over unpleasant things that happen during the day?
  - a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
3. Do you and your partner talk over things you disagree about or have difficulties over?
  - a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
4. Do you and your partner talk about things in which you are both interested?
  - a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently

5. Does your partner adjust what he/she says and how he/she says it to the way you seem to feel at the moment?
  - a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
6. When you start to ask a question, does your partner know what it is before you ask it?
  - a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
7. Do you know the feelings of your partner from his/her facial and bodily gestures?
  - a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
8. Do you and your partner avoid certain subjects in conversation?
  - a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
9. Does your partner explain or express himself/herself to you through a glance or gesture?
  - a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently

10. Do you and your partner discuss things together before making an important decision?
- a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
11. Can your partner tell what kind of day you have had without asking?
- a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
12. Your partner wants to visit some close friends or relatives. You don't particularly enjoy their company. Would you tell him/her this?
- a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
13. Does your partner discuss matters of sex with you?
- a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
14. Do you and your partner use words which have a special meaning not understood by outsiders?
- a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently



15. How often does your partner sulk or pout?
- a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
16. Can you and your partner discuss your most sacred beliefs without feeling of restraint or embarrassment?
- a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
17. Do you avoid telling your partner things that put you in a bad light?
- a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
18. You and your partner are visiting friends. Something is said by the friends which causes you to glance at each other. Would you understand each other?
- a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently
19. How often can you tell as much from the tone of voice of your partner as from what he/she actually says?
- a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently

20. How often do you and your partner talk with each other about personal problems?

- a) Never
- b) Seldom
- c) Occasionally
- d) Frequently
- e) Very Frequently

21. Do you feel that in most matters your partner knows what you are trying to say?

- a) Never
- b) Seldom
- c) Occasionally
- d) Frequently
- e) Very Frequently

22. Would you rather talk about intimate matters with your partner than with some other person?

- a) Never
- b) Seldom
- c) Occasionally
- d) Frequently
- e) Very Frequently

23. Do you understand the meaning of your partner's facial expressions?

- a) Never
- b) Seldom
- c) Occasionally
- d) Frequently
- e) Very Frequently

24. If you and your partner are visiting friends or relatives and one of you starts to say something, does the other take over the conversation without the feeling of interrupting?

- a) Never
- b) Seldom
- c) Occasionally
- d) Frequently
- e) Very Frequently

25. During your relationship, have you and your partner, in general, talked most things over together?
- a) Never
  - b) Seldom
  - c) Occasionally
  - d) Frequently
  - e) Very Frequently

## Technology and Intimate Relationships Assessment

**Purpose:** The purpose of this assessment is to assess how your use of technology impacts your relationship intimacy. In answering the items, think of your technology use in the context of your personal life (e.g., outside what is required for work or school). Then specifically think about your technology use in the context of your romantic relationship.

**Instructions:** Using the following scale, please indicate the extent to which you agree with each item as it applies to you and your relationship.

SA = Strongly Agree  
A = Agree  
N = Neutral  
D = Disagree  
SD = Strongly Disagree

Item #	Test Item	Please circle the answer that best fits your experience
1	My use of technology affects my romantic relationship positively.	SD   D   N   A   SA
2	My use of technology helps me feel more emotionally connected to my partner.	SD   D   N   A   SA
3	My partner's use of technology affects our romantic relationship positively.	SD   D   N   A   SA
4	I feel like I know my partner better because of what I have learned about him or her through technology.	SD   D   N   A   SA
5	Technology helps my partner and me make plans for sharing time together.	SD   D   N   A   SA
6	When my partner and I are facing conflict, I communicate with my partner through technology more frequently.	SD   D   N   A   SA

7	Being "friends" with my partner on Facebook and/or other social networking sites helps to strengthen our emotional connection.	SD	D	N	A	SA
8	My use of technology helps me feel more sexually connected to my partner.	SD	D	N	A	SA
9	If I am feeling anxious about how my partner feels about me, I will check in with him or her using technology (e.g. texting, e-mailing).	SD	D	N	A	SA
10	My partner and I talk in person about how we use technology in our relationship.	SD	D	N	A	SA
11	Technology helps me to stay connected to my partner when we are not together in the same place.	SD	D	N	A	SA
12	When my partner and I are having problems, using technology helps me avoid these problems.	SD	D	N	A	SA
13	When my partner and I are together in the same place, it seems like we do not communicate much because we are both distracted by technology.	SD	D	N	A	SA
14	Using technology helps distract me when I am having problems in my relationship with my partner.	SD	D	N	A	SA
15	Sometimes, I wish my partner would use technology less to communicate with me.	SD	D	N	A	SA
16	My partner is demanding in terms of how soon I respond to his or her text messages, phone calls, and/or e-mails.	SD	D	N	A	SA
17	I have felt jealousy as a result of seeing how my partner interacts with others on social networking sites.	SD	D	N	A	SA
18	When I am feeling neglected in my romantic relationship, I use technology to seek other companionship.	SD	D	N	A	SA

19	I feel like my partner gets distracted by technology when I am trying to talk with him/her.	SD	D	N	A	SA
20	Sometimes, I feel like my partner uses technology to check up on me.	SD	D	N	A	SA
21	My partner would say that I get distracted by technology when she/he is trying to talk with me.	SD	D	N	A	SA
22	I have snooped in one or more of my partner's technology accounts or devices (e.g., a phone call log, e-mail account, or social networking site account).	SD	D	N	A	SA

## Relationship Assessment Scale

### RESPONDENT INSTRUCTIONS

Please circle the letter for each item that best answers each item for you.

1. How well does your partner meet your needs?

A	B	C	D	E
Poorly		Average		Extremely well

2. In general, how satisfied are you with your relationship?

A	B	C	D	E
Unsatisfied		Average		Extremely satisfied

3. How good is your relationship compared to most?

A	B	C	D	E
Poor		Average		Excellent

4. How often do you wish you hadn't gotten in this relationship?

A	B	C	D	E
Never		Average		Very often

5. To what extent has your relationship met your original expectations:

A	B	C	D	E
Hardly at all		Average		Completely

6. How much do you love your partner?

A	B	C	D	E
Not much		Average		Very much

7. How many problems are there in your relationship?

A	B	C	D	E
Very few		Average		Very many